

ADDITIONAL NOTES ON THE GENUS *VITEX*. XXXVI

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VITEX TRIFOLIA var. *SIMPLICIFOLIA* Cham.

Additional bibliography: Franch. & Savat., Enum. Pl. Jap. 1: 360. 1875; Sugiura, Proc. Imp. Acad. Tokyo 12: 145. 1936; Jinno, Jap. Journ. Genet. 31: 148. 1956; Mold., Phytologia 52: 139 & 141--144. 1982.

Jinno (1956) reports the chromosome number for this plant as $n = 16$ -- this is most interesting in view of Sobti & Singh's (1962) report of $2n = 26$ for what they regarded as typical *Vitex trifolia* L. It is hoped that herbarium vouchers have been preserved somewhere to substantiate the identifications!

Merrill (1918) comments that "Although very distinct in habit, and in its leaves usually reduced to a single leaflet, I doubt very much if it is specifically distinct from the erect *Vitex trifolia* Linn." He cites Merrill, *Sp. Blanc. 814* as illustrative of it [the present variety] and 302 as illustrative of typical *V. trifolia*. In his 1923 work he says that it is "A prostrate form with 1-foliolate leaves, occurring only on sandy beaches. Common on the coasts of Luzon and Mindanao, India to Japan, Malaya, and Polynesia."

Ridley records it from Pahang, Kelantan, Indo-Malaya, Australia, and Japan. Fernandez-Villar (1880) lists it from Luzon, Mindanao, Panay, and Cebu. Masamune (1955) records it from Amani-osima, Daitozima, Hirasima, Honshiu, Iheyazima, Iriomote, Isigaki, Kyushiu, Komi, Kumezima, Kutinosima, Miyako, Nakanosima, Sikoku, Taiwan, Takarazima, Tanegasima, Yakusima, and "Ogasawara to the tropics". Suzuki & Nakanishi record it from Dôzen and Dôgo islands in the Oki Islands of the Janan Sea.

Stone (1970) describes this plant as "A paleotropical strand plant, probably native in Guam, but uncommon [there]. The foliage is aromatic." Ohwi (1965) lists it from Honshu, Shikoku, Kyushu, Korea, Taiwan, the Bonin Islands, and the Ryukyu Island Archipelago. Hyland (1967) records it as cultivated in Maryland, based on *U. S. Dept. Agr. Pl. Invent. 271881* and *K.470* from Korea.

Linnaeus' original (1781) description of his *V. rotundifolia*, taken from Thunberg, is "*VITEX* foliis simplicibus obovatis integerrimis, pedunculis axillaribus solitariis unifloris brevissimis. Habitat in Iaponia. Thunberg. $\frac{1}{2}$ Arbor facie & colore similis *V. Agn-casto*, foliis excepta. Folia fere subrotunda, bipollicaria. Pedunculi axillares, breves, uniflori."

Thunberg's original (1784) description of his *V. ovata* is "fol. ovalibus obtusis subtus tomentosus; panicula terminali trichotoma; caule decumbente repente."

Blanco (1837) describes his *V. repens* as "Tronco se extiende por la tierra. Hojas simples ovales, enteras y blanquecinas por debajo. Flores axillares, en panoja simple. Drupa globosa con la nuez de cuatro aposenos. = Esta especie se extiende muchisimo por

las playas del mar, y se hace á lo mas como la muñeca: arroja tallos en donde toca en tierra. El fruto de esta y de otras especies, es poco mayor que on guisante, mui aromático, y como que se parece al de la pimienta. Flor. en Mayo y en otros meses."

Pételot (1953) says that "D'après Poilane (in Herb., no 1,448), la variété *unifoliata* est médicinale aux environs de Tourane au Center-Vietnam. Les feuilles récoltées sont mises dans un récipient et grillées à la façon du café, on les étale ensuite sur la terre pendant 20 minutes en les recouvrant d'un linge. On les lave et on les fait bouillir dans de l'eau. On obtient ainsi une boisson que l'on donne aux femmes après l'accouchement comme calmant et dépuratif."

Sonohara (1952) reports that in Japan it is "used for drugs and as a protection against sand", calling it "A semicreeping shrub, common on seashores there".

Hu (1981) gives its pharmaceutical name as "Fructus Viticis", the same as for typical *V. trifolia*. Altschul (1973) reports the seeds medicinal, based on an unnumbered Uno collection from Japan. Kashimoto (1964) gives an analysis of the oil extracted from the fruit.

Nagata (1971) tells us that in Japan a tea is brewed from the leaves, and that the leaves, seed, and wood are used in a bath in the treatment of backache, swollen feet, and rheumatism. Ebert (1907) and Hartwell (1971) report that in China it is employed to treat glandular tumors. Stargardt (1976) avers that in Thailand it is used in the making of sweets, for example, as a dark jelly.

Kimura and his associates (1967) isolated a flavone pigment, vitexicarpin, from the fruits, which pigment is identified as perhaps the same as casticin, 5,3',-dihydroxy-3 6, 7, 4'-tetramethoxyflavone (by mixed fusion with I. R. spectra). Hayashi and his associates (1969) found no vitexine or other flavone color in the roots.

It is worth noting that the illustration given by Pope (1968) as *V. trifolia* L. actually represents, instead, vars. *simplicifolia* and *subtrisecta*. Menninger's (1970) photograph 285 is labeled "*Vitex simplicifolia*" and photograph 286 is labeled "*Vitex trifolia*", but they are both identical and plainly represent var. *simplicifolia*.

Chamisso's original (1832) description of the variety is sometimes mis-cited as "Linnaea 8: 107" instead of "7: 107". Masamune's (1932) work is sometimes cited as "no. 121". Hepper & Silva describe the leaves as "glaucous", but they certainly are not so (at least, in the ordinary botanical sense of this word). Specht and some other collectors refer to the plant as a "perennial herb", but it certainly is never truly herbaceous. Santos 6210 shows several deeply 3-lobed leaves. The *W. V. Brown 1605*, cited below, bears a notation on its accompanying label that the plant was "perhaps cultivated".

Hallier (1918) cites Hallier 4230d from Hong Kong and 4230 & 4230a from Luzon. Williams (1905) cites Schomburgk 243 from Thailand; Craib (1911) cites Schmidt s.n. from the same country, while

Ridley (1911) cites Keith s.n. and Fletcher (1938) cites Annandale s.n., Bourke-Burrows s.n., Keith s.n., Kerr 16127, Lakshnaka 78, and Marcan 2262.

Dop (1928) cites Gaudichaud 114, Lecomte & Finet 933 & 2071, and Poilane 6074 from Annam, Godefroy 644 and Pierre s.n. from Cambodia, Gaudichaud s.n. and Harmand 844 from Cochinchina, and Bon 5503 from Tonkin.

Drake del Castillo (1892) cites Bastard s.n. from the Marquesas Islands, Hillebrand s.n., Macrae s.n., Mann & Bragham s.n., and Rémy 407 from the Hawaiian Islands, Forster s.n. from the Tongan Islands, and Barclay s.n., Homes s.n., and Seemann s.n. from the Fiji Islands.

Walker (1976) cites Field & Lowe 21v, Fosberg 36971, Hatusima 17566, Kuidzumi s.n., and SIRI.5781, 5868, 6009, & 6028 from Okinawa, Fosberg 38480 & 48583 from Miyako, Okuhara & Sunigawa 54 from Irabu, and Fosberg 37605 from Taketami.

Hsiao (1978) cites Oldham 382, Price 494, Takenouchi s.n., and Wilson 10978 from Taiwan, and avers that the plant is found on sandy seashores from northern to southern Taiwan, as well as in China, Korea, Japan, and the Philippine Islands.

While most herbarium specimens exhibiting unifoliolate leaves with long petioles represent var. *subtrisecta* (Kuntze) Mold., Fortune 90 shows conspicuous petioles on what otherwise seems to be a specimen of var. *simplicifolia* -- perhaps it represents a hybrid.

Material of *V. trifolia* var. *simplicifolia* has often been misidentified and distributed in herbaria as *V. negundo* L., typical *V. trifolia* L., and even *Cordia* sp. On the other hand, the *W. V.* Brown 1655, Fosberg 37943, Henrickson 3933b, Hu 12469, and Rothdauscher s.n. [Manilla 1879], identified and distributed as *V. trifolia* var. *simplicifolia*, actually are var. *subtrisecta* (Kuntze) Mold., while Murata & al. T.17396 is *Premna foetida* Reinw. and "A. J." 4101 is *P. obtusifolia* var. *serratifolia* (L.) Mold. Wilkes s.n. is a mixture of *V. trifolia* var. *simplicifolia* and var. *subtrisecta*.

Additional citations: INDIA: Kerala: Silvarajan 485 (Ld), 4852 (Uc). SRI LANKA: Hepper & Silva 4757 (W--2719965). CHINA: Fuki-en: En 2224 (Mu). THAILAND: Charoenphol, Larsen, & Warncke 3427 (Ac); Larsen & Larsen 33723 (Ac); R. Schomburgk 243 (Pd); Surapat 45 (W--2450857). MALAYA: Pahang: Carrick 275 (Kl--1275). Trengganu: Herb. Univ. Malaya 5015 (Kl); "A. J." 4112 (Kl--7637); Sinclair 7526 (W--2913177); Soepadmo KLU.9116 (Kl--12913); Soepadmo & Magmud 9173 (Ne--57501). MALAYAN ISLANDS: Tioman: Soepadmo 1399 (Ac). CHINESE COASTAL ISLANDS: Hainan: Liang 64027 (Mu); Wang 33826 (Ml). Lantau: Taam 1702 in part (Ml, N); Ying 669 (Ml). HONG KONG: Chan 1079 (Ml); Fortune 90 (E--2168599); Hu 5894 (W--2711157), 12286 (W--2730642); Woo & Woo 475 (Ml). HONG KONG OFFSHORE ISLANDS: High: Hu 8635 (W--2697642). JAPAN: Honshu: Hiroe 14502 (Ws); Iwatsuki & Matsumura 5479 (Mu, N, W--2510031, Ws); Kirino 762 (Bl--158313); Maruyama & Okamoto 1600 (Ba, Bl--157676, Ml, Ws); Maximowicz s.n. [Yokohama, 1862] (Mu--1331, Pd); Okuyama s.n. [Aug. 14, 1949] (Ba); Sasaki & Togasi 606 (Ba, Se--161639,

Ws); Suzuki s.n. [Sept. 27, 1952] (Se--163328). Kyushu: Koyama 7043 (N, N); Oldham 626 (Mu--684, Pd); Tagawa 5276 (N), 5376 (Ws). Shikoku: Seto 18764 (Ne--62392). Tsushima: Ohashi, Ohba, & Tateishi 128 (W--2751556). Island undetermined: Siebold s.n. (Mu--683). TAIWAN: Koyama & Kao 8936 (N); Oldham 382 (Pd); Sasaki 380475 (Mi). RYUKYU ISLAND ARCHIPELAGO: Ikema: Fosberg 38583 (W--2647380). Irabu & Shimoji: Okuhara & Sunagawa 54 (W--2647381). Iriomote: Fosberg 37765 (W--2647391). Kutaka-shima: W. V. Brown 1605 (Au--165928). Miyako: Fosberg 38480 (W--2647366). Okinawa: Beauchamp 932 (W--2620640), 958 (W--2620672); Fosberg 36971 (W--2647379); Koyama 7311 (N). Taketomi: Fosberg 37605 (W--2647382). PHILIPPINE ISLANDS: Batan: Ramos, Herb. Philip. Bur. Sci. 80211 (Mi). Hermana Mayor: J. V. Santos 6210 (W--2246876). Luzon: Borden, Herb. Philip. Forest Bur. 1940 (W--850788); Escrito, Herb. Philip. Bur. Sci. 21171 (W--900853); Haenke s.n. (Mu); Loher 4434 (W--446880); E. D. Merrill 323 (W--435308), Sp. Blanc. 814 (W--904496); Rothduscher s.n. [Manilla, 1879] (Mu--1528); J. V. Santos 6267 (W--2246897); Sinclair 9673 (W--2946519); Whitford 755 (W--851775). Mindoro: Mangubat, Herb. Philip. Bur. Sci. 926 (W--439733); E. D. Merrill 898 (W--435866). Palawan: Travis 75 (Ba). Sibuyan: Elmer 12135 (W--779767). Island undetermined: Cuming 1493 (Mu--1353). GREATER SUNDA ISLANDS: Selingan: Cockburn SAN.68413 (Id). NEW CALEDONIAN ISLANDS: New Caledonia: Schlecher 15548 (Mu--4091). FIJI ISLANDS: Island undetermined: Wilkes s.n. [Feejee Islands] (W--74077). AUSTRALIA: Northern Territory: Byrnes N.B.291 (Ai--14346); Chippendale 8159 (Ai); Maconochie 525 [Herb. North. Terr. 13596] (Ac); R. A. Perry 1223 (Ai, W--2072187); Specht 677 (W--2094859). Queensland: Helms 1132 (W--1348852). State undetermined: Walker s.n. [Cape Sidmouth] (Mu--1530). AUSTRALIAN ISLANDS: Facing: S. T. Blake 22530 (Ac). GREAT BARRIER REEF: Eagle: Stoddart 4815 (W--2744415). Fife: Stoddart 4956 (W--2744417). Ingram: Stoddart 4041 (W--2744418). Morris: Stoddart 4974 (W--2744419). Saunders: Stoddart 5074 (W--2744224). Sinclair: Stoddart 4189 (N, W--2744416). HAWAIIAN ISLANDS: Kauai: G. E. Douglas 383 (It); Fosberg 53663 (N, W--2669245), 56709 (N, W--2811358); A. A. Heller 273 [Meebold 24820] (Mu, W--368711), St. John, Britten, Cowan, Frederick, Webster, & Wilbur 22958 (Au--122935), 22967 (Au--122934). Maui: Topping s.n. [Herb. Degener 9504] (It, W--1626513). Molokai: O. Degener 9506 (W--1626514); Herbst & Spence 5733 (W--2893502); A. S. Hitchcock 15143 (W--874549). Oahu: R. S. Cowan 1060 (W--1993396); S. P. Darwin 1083 (W--2927104); O. Degener 10018 (W--1668216); Degener & Degener 34381 (Ac, Lc, Ld, N), 34391 (Mu); Fosberg 27125 (N, W--2676659); Hatheway & Caindec 139 (W--2159259); Meebold 20122 (Mu), 20480 (Mu); B. C. Stone 2721 (Kl--9897); Webster 1095 (Au--122933); Webster, Gankin, & Herbst 13843 (Mi); Young & Lowry 1622 (N). Island undetermined: J. G. Smith s.n. [Feb. 26, 1902] (W--412997). CULTIVATED: Florida: Dress 1518 (Ba). Hawaiian Islands: *Iltis* H.301 (Ld, Ws). Zimbabwe: Biegel 3949 (Ba--374223). LOCALITY OF COLLECTION UNDETERMINED: Collector undetermined 101 (Mi). MOUNTED ILLUSTRATIONS: Degener, Fl. Haw. 315: *Vitex*: *Trif*: *Ovata* (Ba); Mak., Illustr. Fl.

Nipp. 186, fig. 558. 1940 (Ld, Ld).

VITEX TRIFOLIA var. *SIMPLICIFOLIA* f. *ALBIFLORA* (Y. Matsumura) Mold.

Additional bibliography: Mold., *Phytologia* 17: 117. 1968; Mold., *Fifth Summ.* 1: 353 (1971) and 2: 930. 1971; Mold., *Phytologia* 34: 266. 1976; Mold., *Phytol. Mem.* 2: 298, 302, & 595. 1980; Mold., *Phytologia* 48: 490. 1981.

Soepadmo describes this plant as a "creeping plant; leaves green above, glaucous beneath; calyx green; corolla white" and erroneously identified it as *V. negundo* L. The leaves are actually not truly glaucous beneath, at least, in the sense that this term is usually used in botany.

Additional citations: MALAYA: Trengganu: Soepadmo KLU.9173 (Kl--12963).

VITEX TRIFOLIA var. *SUBTRISECTA* (Kuntze) Mold.

Additional synonymy: *Vitex rotundifolia* var. *heterophylla* Mak., *Illust. Fl. Nipp.* 186. 1940. *Vitex rotundifolia* var. *Sonohara*, Towada, & Amano, *Fl. Okin.* 133. 1952. *Vitex agnus-castus* var. *subtrisecta* Kuntze apud Mold., *Phytologia* 6: 165, in syn. 1958. *Vitex ineisa* Hartwell, *Lloydia* 34: 388. 1971. *Vitex rotundifolia* f. *heterophylla* (Mak.) Kitamura, *Act. Phytotax. Geobot.* 25: 34. 1972. *Vitex rotundifolia* var. *heterophylla* "[Roxb.] Makino" apud E. H. Walker, *Fl. Okin. South. Ryuk.* 894, in syn. 1976 [not *Vitex heterophylla* Roxb., 1814 & 1832].

Additional & emended bibliography: Roxb., *Hort. Beng.*, imp. 1, 46. 1814; Roxb., *Fl. Ind.*, ed. 2, 3: 75. 1832; Hassk., *Flora* 25: 26. 1842; Naves & Fern.-Villar in Blanco, *Fl. Filip.*, ed. 3, 4: 160. 1880; F. M. Bailey, *Cat. Indig. Nat. Pl. Queensl.* 35. 1890; Warb., *Engl. Bot. Jahrb.* 10: 429 (1890) and 13: 428--429. 1891; F. M. Bailey, *Queensl. Fl.* 4: 1179. 1901; Craib, *Kew Bull. Misc. Inf.* 1911: 443. 1911; Koord. & Valet., *Atlas Baumart. Jav* 6: fig. 292. 1914; Masamune, *Enum. Trach.* 7: 48. 1935; Mak., *Illyst. Fl. Nipp.* 186. 1940; Hara, *Enum. Sperm. Jap.*, imp. 1, 1: 191. 1948; Sonohara, Tawada, & Amano, *Fl. Okin.* 133. 1952; Masamune, *Sci. Rep. Kanazawa Univ.* 4: 48. 1955; Mold., *Phytologia* 6: 165 & 180--183 (1958) and 17: 116--119. 1968; Mold., *Résumé Suppl.* 16: 12 (1968) and 17: 12. 1968; Pope, *Wayside Pl. Haw.* 195 & 196, pl. 111. 1968; Corner & Watanabe, *Illustr. Guide Trop. Pl.* 770. 1969; A. L. Mold., *Phytologia* 18: 331. 1969; Hartwell, *Lloydia* 34: 388. 1971; W. H. Lewis, *Rhodora* 73: 47. 1971; Mold., *Fifth Summ.* 1: 31, 94, 263, 279, 284, 285, 291, 293, 294, 298, 303, 307, 311, 312, 314, 319, 329, 331, 333, 338, 341, 343, 344, 349, 351--353, & 375 (1971) and 2: 712, 727, 729, 792, & 930. 1971; Patel, *Forest Fl. Gujarat* 231. 1971; Hara, *Enum. Sperm. Jap.*, imp. 2, 1: 191. 1972; Kitamura & Murata, *Act. Phytotax. Geobot.* 25: 34. 1972; Mold., *Phytologia* 23: 424. 1972; Backer, *Atlas 220 Weeds [Handb. Cult. Sugarcane 7:]* pl. 521. 1973; Mold., *Phytologia* 25: 233 & 245 (1973), 28: 446, 448, & 452 (1974), and 31: 376 & 390. 1975; O. & I. Degener & Pekelo, *Haw. Pl. Names X.1.* 1975; Lakela, Long, Fleming, & Genell, *Pl. Tampa Bay*, ed. 3 [Bot. Lab. Univ. S. Fla.

Contrib. 73:] 117 & 183. 1976; Mold., Phytologia 34: 248, 254, & 268. 1976; E. H. Walker, Fl. Okin. South. Ryuk. 893--894, fig. 179. 1976; Clay & Hubbard, Haw. Gard. Trop. Shrubs 185 & 294. 1977; A. L. Mold., Phytologia 36: 87. 1977; Mold., Phytologia 36: 40. 1977; Fosberg, Sachet, & Oliv., Micronesica 15: 239. 1979; J. T. & R. Kartesz, Syn. Checklist Vasc. Fl. 2: 468. 1980; Mold., Phytologia 46: 42. 1980; Mold., Phytol. Mem. 2: 25, 87, 252, 253, 266, 274, 275, 280, 282, 283, 288, 290, 294, 298, 299, 302, 303, 305, 309, 319, 321, 323, 324, 328, 330--333, 339--343, 368, 459, & 595. 1980; Mold., Phytologia 48: 488 & 490 (1981), 50: 242 (;982), 51: 217, 344, & 351 (1982), and 52: 139 & 141. 1982.

Additional illustrations: Koord. & Valet., Atlas Baumart. Java 6: fig. 292. 1914; Pope, Man. Wayside Pl. 196, pl. 111 in part. 1968; Corner & Watanabe, Illust. Guide Trop. Pl. 770. 1969; Backer, Atlas 200 Weeds [Handb. Cult. Sugar-cane 7:] pl. 521. 1973; E. H. Walker, Fl. Okin. South. Ryuk. 894, fig. 179. 1976.

The type of this variety is *Kuntze 5817* from 2000 feet altitude in the "Willisgebirge" in Java, deposited in the Britton Herbarium at the New York Botanical Garden. The variety differs from the typical form of the species in usually being a dwarf, erect or prostrate shrub with both 1-foliolate and 3-foliolate leaves regularly or apparently irregularly interspersed on the branches; often the single leaflets are shallowly or deeply bi- or trisected or even binary.

It is a very variable taxon, perhaps actually consisting of more than a single taxon, apparently native from the littoral belt close to mangrove formations to riverbanks and inland hillsides as much as 4000 feet in altitude, from India, the Andaman Islands, Burma, Thailand, Malaya, and Indochina north to southern China and Japan, west to the Mascarene Islands and Madagascar, east through the Ryukyu and Philippine Islands to Indonesia, the Lesser Sunda Islands, New Guinea, New Caldeonia, Fiji, and Polynesia, and south to northern Australia. It is widely cultivated, especially as a hedge, and tends to persist or escape. It is regarded as medicinal on Hainan Island and the bark and roots provide a febrifuge in Thailand. In Sumatra the branches are burned and the resulting smoke is directed to acheing joints.

It is very possible that *Vitex trifolia* var. *acutifolia* Benth. in Benth. & F. Muell., Fl. Austral. 5: 67 (1870) may prove to be the earliest and therefore valid name for this taxon, although it is now regarded as applying to the very similar Australian *Vitex benthamiana* Domin. A study of the type in the Kew herbarium is required to settle this matter.

The name, *V. rotundifolia* var. *heterophylla*, proposed by Makino, seems to have nothing to do with the *V. heterophylla* of Roxburgh [now regarded as a synonym of *V. quinata* (Lour.) F. N. Will.], in spite of the fact that Walker (1976) seems to think that it does.

Recent collectors describe *Vitex trifolia* var. *subtrisecta* as a prostrate or creeping woody plant, prostrate shrubby creeper, dense and erect or diffusely spreading bush or shrub, 0.5--4 m. tall, branched from the base, to a bushy tree, 5--8 m. tall, to 2

m. in diameter, often spreading by prostrate runners, scented like desert sagebrush (*Artemisia tridentata*), the flowering shoots erect, 20--30 cm. long; the leaves dull-green to dark- or gray-green above, "glaucous"-white to gray- or pale gray-green beneath, aromatic, some 1- and some 3-foliolate; the flowers profuse, aromatic, the corollas bilabiate, mint-like; and the fruit glaucous-green at first, later brown to dark-brown when ripe.

The corollas are said to have been "blue" on Buchholz 1536, Buden 58, D'Arcy 2950, Hu 12464, Lamoureux 2896, Sousa 11222, and Stoddart 4614, 4756, & 4849, "light-blue" on Shah MS.1212, "pale-blue with a white throat" on Specht 42, "blue-lavender" on Fosberg 37943, "bluish-purple" on Brumbach 8262, "blue-purple" on Hu 12469, "blue-mauve" on Schodde & Craven 4544, "mauve" on McKee 2401, "pale-purple" on Chippendale 8235, "purplish" on Correll & Meyer 44661, "purple" on King's Collector 388 and Walker 8125, "pale blue-purple" on Van Royen & Sleumer 8249, "pale-lavender" on Fay 203, "lavender" on Correll & Correll 48992, Correll & Kral 42981a, Fosberg 34926, and Henrickson 3933b, "deep-lavender to violet" on Fosberg 37681, "violet" on Fosberg 37304 & 58825 and Lewis 7124, and "lilac" on Chippendale 8162, Robinson 2446, and Stoddart 4466.

Recent collectors have encountered the plant on stable sand-dunes and dunes, sand-cays, hillsides and steep hillsides, seaward crests of sand-shingle cays, steep roadbanks, and roadcut walls, in disturbed ground, the margins of monsoon forests, riverbeds, grasslands, and mangrove forests, along the edges of sandy beaches and coppices, and in the bare shingles of shingle-mangrove islands. It is said to be common on sand beaches and on the dunes behind beaches, found from sealevel to 2000 feet altitude, in flower from February to December, and in fruit in February and June to December.

Schodde & Craven refer to it as a "tree of river margins" in New Guinea. Sherma encountered it in open grassland in Sumatra. In the Great Barrier Reef Stoddart refers to it as "occasional back of the beaches", "rare", "uncommon", or "locally common", while Fosberg reports it "forming scrub on berms of lagoon beaches" on Lizard Island and "common around the edges of thickets" on Kobama. Taam found it "abundant in dry sandy soil of level ground near beaches among scattered shrubs" on Lantao Island. Sachet reports it forming clumps in *Tournefortia* forests.

In the Bahamas the Corrells describe it as "common in vacant lots" and Correll & Kral refer to it as "weedy", but Lewis asserts that it is only "occasional and perhaps cultivated", certainly introduced. In the Northern Territory of Australia it occurs "on beach ridges in [the] zone of monsoon woodland with an annual rainfall of 60 inches".

Walker (1976) reports it "common on sandy seashores" on Okinawa and the southern Ryukyu Islands, the corollas there "blue, purple, or violet" in color. Corner & Watanabe (1969) describe it as a "Shrub of villages and waste places. Leaves 3-foliolate, or 1-foliolate, white-felted beneath. Flowers pale blue. Panicles

with short branches. Medicinal."

Sonohara and his associates (1952) record this plant from Kume and Iriomote; Masamune (1955) lists it from Isigaki, Obama, Iriomote, and "Taiwan to [the] tropics". Kitamura & Murata (1972) record it from Kyushu, Amami-oshima, the Ryukyu Islands, and southern China. Fosberg (1979) found it on Saipan, Tinian, Guam, Yap, Kusaie, Wake, Kwajalein, Banaba, and Nauru islands. Fay describes it as "tree-like shrubs forming hedges 3 m. tall" in Hawaii.

Hara (1948) describes the leaves as "aut simplicia aut tripartita". McKee refers to its as a "semi-prostrate herb". Buchholz was of the opinion that this plant is a member of the *Lamiaceae*.

Common and vernacular names reported for this variety are "ahinahina", "blue vitex", "kawariba-hamago", "kawari-hama-gō", "lagondee", "lagundi", "lemuning", "salagundi na hian", "salt-bush", "shirobana-hamago", and "variable-leaved vitex".

The "*Vitex trifolia*" of Long and his associates (1976), described as planted and "escaping locally" in the Tampa Bay region of Florida, actually is var. *subtrisecta*. The illustrations given by Backer (1973), Corner & Watanabe (1969), and Walker (1976) as typical *V. trifolia* L., actually represent var. *subtrisecta* instead, while that given by Pope (1968) depicts var. *simplicifolia* and var. *subtrisecta*. Elmer 15236 is a mixture of var. *bicolor* and var. *subtrisecta*, while Wilkes s.n. is a mixture with var. *simplicifolia*. The Merrill Sp. Blanc. 302, previously cited as var. *subtrisecta*, seems to be (in part, at least) typical *V. trifolia*. Elmer 7877, distributed as *V. negundo* and cited previously by me as typical *V. trifolia*, seems (at least, insofar as the U. S. National Herbarium specimen is concerned) definitely to represent var. *subtrisecta*. This is true also of Merrill 957 and Whitford 674.

Craib (1911) comments that the Schmidt collection which he cites as "*V. trifolia*" is typical var. *simplicifolia* but some of the Kerr 1248 specimens "show trifoliolate associated with unifoliolate leaves on the same branches" and thus probably represent what is now denominated as var. *subtrisecta*. Patel (1971) refers to a form in Gujarat as having "sessile 3-foliolate and simple leaves".

Fosberg comments that on his no. 34926 the "degree of dilation of [the] corolla-throat and [the] length of [the] corolla-] tube plus the throat, [the] stamen length, [and the] style length [are] all variable in the same inflorescence." Of his no. 36709 he says "leaves trifoliolate on some bushes", but the U. S. National Herbarium sheet of this number shows the leaves 1-foliolate on long petioles -- a variability quite widespread in this taxon [cfr. Sivarajan 1199].

A number of collections, apparently of var. *subtrisecta*, have been distributed as var. *variegata* Mold. -- Spence 151 seems definitely to be var. *variegata*; Fay 203 has a notation by the collector on its accompanying label "some leaves variegated" and most of the Florida [U.S.A.] collections [e.g., those of Buswell, of Brumbach, and of Pecora], cited below, may very well be that form, even though the variegation is not evident on the herbarium specimens -- the Brumbach collection is said to have been taken from material

that had "escaped in thickets".

The Brown 1655 collection shows all the leaves 1-foliolate, but they are all long-petiolate, so it is definitely to be regarded as var. *subtrisecta*.

Walker (1976) cites Amano 8125, Carow 5, Field & Lowe 2lv, Fosberg 36971, Hatusima 17566, Koidzumi s.n., SIRI 5781, 5868, 6009, & 6028 and Walker 8125 from Okinawa, Fosberg 38480 from Miyako, Fosberg 48583 from Ikema, Okuhara & Sunagawa 54 from Irabu, Fosberg 37605 from Taketomi, Fosberg 37943 from Kobama, Fosberg 37765, Kimura & Hurusawa 51, and SIRI 6601 & 6602 from Iriomote, and Fosberg 37304 from Ishigaki islands.

Lewis (1971) cites his no. 74 as "probably cultivated" in the Bahama Islands.

Material of this taxon has been distributed in herbaria under many names, including the following: *Vitex mollis* H.B.K., *V. nungundo* L., *V. ovata* Thunb., *V. rotundifolia* Cham., *V. trifolia* L., *V. trifolia* L.f., *V. trifolia* var. *simplicifolia* Cham., *V. trifolia* var. *trifolia* [L.], *V. trifolia* var. *variegata* Mold., and *V. trifoliolata* L.

Additional citations: FLORIDA: Indian River Co.: D'Arcy 2950 (Sd--74237). Sanibel Island: Brumbach 8262 (M1, N, W--2751430). MEXICO: Quintana Roo: Sousa 11222 (Ld). BAHAMA ISLANDS: Eleuthera: Correll & Correll 48992 (N). Grand Bahama: Correll & Kral 42981a (N); W. H. Lewis 7124 (Mu). San Salvador: Gillis 5281 (Ln--176347). INDIA: Kerala: C. B. Clarke s.n. [Malabar] (Pd); Hohenacker 703 (Mu--623); Silvarajan 1199 (Ld, Uc). BANGLADESH: J. M. Cowan s.n. (It). BURMA: Alsterlund 9 (Go, Go, Go, Ld). Shan States: Aplin s.n. [Nov. 1887] (Pd). Tenasserim: Helfer 6057 (Mu--624). Upper Burma: King's Collector 388 (Pd). CHINESE COASTAL ISLANDS: Hainan: Fung 20300 (M1). Lantao: Taam 1702 (Ba, M1). HONG KONG: Fortune 90 (Mu--681); Hu 12464 (W--2730669), 12469 (W--2730672). MALAYA: Singapore: Herb. Schlesisch. Bot. Tauschver. 113 (Mu--4381). RYUKYU ISLAND ARCHIPELAGO: Ishigaki: Fosberg 37304 (N, W--2647378), 37681 (N, W--2647367). Kobamajima: Fosberg 37943 (W--2647369). Okinawa: Amano 7191 (N); W. V. Brown 1655 (Au--165927); E. H. Walker 8125 (W--2619391). PHILIPPINE ISLANDS: Lubang: E. D. Merrill 957 (W--435930). Luzon: Elmer 7877 (W--629818), 15236 in part (W--897397); Loher 4436 (W--446881); Rothdauscher s.n. [Manilla, 1879] (Mu--1526, Mu--1527, Mu--1529); Whitford 674 (W--851725), 988 (W--851870). Mindanao: Copeland 691 (W--850502). GREATER SUNDA ISLANDS: Celebes: C. B. Robinson 2449 (W--775416). Jambongan: Cabiling 3981 (Pd). Java: Jelinek s.n. (Ba). Sumatra: Sherman 105 (Ba). LESSER SUNDA ISLANDS: Bali: Dilmy 944 (W--2724228). Timor: Herb. Mus. Paris s.n. (W--74076). WAKE ISLAND: Peale: Sachet 896 (W--2637957). NEW GUINEA: Papua: Schodde & Craven 4544 (W--2888729). West Irian: Van Royen & Sleumer 8249 (M1). NEW HEBRIDES: Eromange: Macgillivray s.n. (Pd). NEW CALEDONIA: Buchholz 1536 (W--1968914); Deplanche 1048 (Pd); Forster 116 (Mu--680); Guillaumin 8540 (N); McKee 2401 (W--2192611); J. H. Taylor 47 (Ba). FIJI ISLANDS: Wilkes s.n. [Feejee Islands] in part (W--74077). Vanua Levu: A. C. Smith 6610 (W--1966794). Viti Levu: Gillespie 4380 (W--1599950); A. C. Smith

4559 (N), 6078 (N). AUSTRALIA: Northern Territory: Byrnes 14270 (Ai); Chippendale 8162 (Ai), 8235 (Ai); Sauer 3381 (Ws); Specht 42 (W--2094474). GREAT BARRIER REEF: Howick: Stoddart 4849 (W--2744032). Lizard: Fosberg 54993 (W--2739033). Low Wooded: Stoddart 4577 (W--2759871). Three Isles: Stoddart 4466 (W--2759698). Turtle-III: Stoddart 4756 (W--2744420). Two Isles: Stoddart 4614 (W--2759855). HAWAIIAN ISLANDS: Maui: Henrickson 3933b (W--2829004). LINE ISLANDS: Johnston: Fosberg 34926 (W--2399761); Lamoureux 2896 (W--2859715). TUAMOTU ARCHIPELAGO: Raroia: Doty & Newhouse s.n. [Doty 11730] (W--2129055). AUSTRAL ISLANDS: Rurutu: Fosberg 11981 (N); Stokes 1 (W--1968105). CULTIVATED: Australia: M. S. Clemens 43494a (N). Bahama Islands: Correll & Meyer 44661 (Ba); Gillis 7862 (Ft, Go). Florida: Buden 58 (Ws); Buswell s.n. [June 14, 1941] (Ba, Ba), s.n. [Aug. 21, 1941] (Ba, N); Gillis 9793 (Ft, Ld); Landingham 268 (Ne--578); Rohwer s.n. [July 21, 1963] (N); P. O. Schallert 23077 in part (Ws). Hawaiian Islands: L. M. Andrews 379 (N); Fay 203 (N); Sohmer s.n. [St. Louis Heights] (N, W--2812204). India: Herb. Hort. Bot. Calcutt.'s.n. (Pd). Kwajalein: Fosberg 36709 (W--2399505). New York: Pecora s.n. [Aug. 8, 1949] (N). Rita Island: Fosberg 58825 (W--2882943). Singapore: Shah MS.1212 (Ba). Sri Lanka: Moldenke, Moldenke, & Jayasuriya 28148 (W--2764409). MOUNTED CLIPPINGS: E. H. Walker, Fl. Okin. South. Ryuk. 894. 1976 (W).

VITEX TRIFOLIA var. *SUBTRISECTA* f. *ALBIFLORA* Mold.

Additional bibliography: Mold., *Phytologia* 17: 118--119. 1968; Mold., Fifth Summ. 1: 311 (1971) and 2: 727 & 930. 1971; Mold., *Phytol. Mem.* 2: 343 & 595. 1980.

Additional citations: AUSTRAL ISLANDS: Rurutu: *St. John* 16705 (W--1992883--isotype).

VITEX TRIFOLIA var. *VARIEGATA* Mold.

Additional synonymy: *Vitex trifolia* 'Variegata' Watkins, Fla. Landsc. Pl. 307. 1969; Mold., Fifth Summ. 2: 730, in syn. 1971. *Vitex trifolia* cv. 'Variegata' L. H. & E. Z. Bailey, Hortus Third 1162. 1976.

Additional bibliography: J. F. Morton, Proc. Fla. Hort. Soc. 75: 491. 1962; Mold., *Phytologia* 17: 118--119. 1968; J. F. Morton, Proc. Fla. Hort. Soc. 82: 418, fig. 4 (right). 1969; Watkins, Fla. Landsc. Pl., ed. 1, imp. 1, 307. 1969; Hodge, Trop. Gard. 128. 1971; Long & Lakela, Fl. Trop. Fla., ed. 1, 739 & 961. 1971; Mold., Fifth Summ. 1: 351 & 375 (1971) and 2: 730 & 930. 1971; J. F. Morton, Pl. Poison. People 113 & 116. 1971; Mold., *Phytologia* 25: 245. 1973; Watkins, Fla. Landsc. Pl., ed. 1, imp. 4, 307 (1973) and ed. 1, imp. 5, 307. 1974; J. F. Morton, 500 Pl. S. Fla. [151]. 1974; Balgooy & Vigel in Van Steenis-Kruseman, Pacif. Pl. Areas 3: 276. 1975; L. H. & E. Z. Bailey, Hortus Third 1162. 1976; Long & Lakela, F. Trop. Fla., ed. 2, 739 & 961. 1976; Poppeton, Shuey, & Sweet, Fla. Scient. 40: 384. 1977; Lord, Trees Shrubs Austral. Gard., ed. 5, 232. 1978; Perkins & Payne, Guide Poison. Pl. Fla. [Fla. Coop. Ext. Serv. Inst. Food Agric. Sci.

Circ. 441:] [53]. 1978; J. T. & R. Kartesz, Syn. Checklist Vasc. Fl. 2: 468. 1980; Mold., Phytol. Mem. 2: 341, 368, 460, & 595. 1980; Everett, N. Y. Bot. Gard. Illust. Encycl. Hort. 10: 3515. 1982; Mold., Phytologia 51: 340. 1982.

Additional illustrations: J. F. Morton, Proc. Fla. Hort. Soc. 82: 418, fig. 4. 1969; Watkins, Fla. Landsc. Pl., ed. 1, imp. 1, 307 (1969), ed. 1, imp. 4, 307 (1973), and ed. 1, imp. 5, 307. 1974.

Spence describes this plant, apparently growing wild on Kauai (Hawaiian Islands) as a "large shrub, 12 feet tall, growing at 50 feet altitude with *Pluchea* and *Lantana*, the leaves sometimes simple, sometimes trifoliate, the leaflets obovate-oblongate, to 6 cm. long and 3 cm. wide, with whitish variegations along the midrib disappearing when dry, the young branches and leaves canescent, the inflorescence a narrow panicle at branch tips, the corollas blue". Neal, however, describing plants growing wild on Oahu notes "leaves 1--3-foliolate, some white-edged, corollas light-violet, darker on the lip". The Baileys (1976) say merely "Leaves variegated". Lord (1978) says "leaves broadly margined cream" and refers to the plant as a "very showy shrub". Morton (1969), in the illustration accompanying her comments, shows the leaflets very irregularly white-margined. She notes that "These aromatic plants [*V. trifolia* and the var. *variegata*] commonly planted as hedges in South Florida, cause respiratory irritation, especially when being trimmed and afterwards while the cuttings still are lying on the ground. Some people suffer not only asthma-like symptoms but also dizziness, headaches and nausea. Children sometimes chew the leaves but desist because of the burning taste. In the Far East, the leaves are placed in irrigation water in rice fields to protect the plants from pests, and dry, powdered leaves are used to repel insects from stored grain and clothes." For further information on the economic uses and chemical constituents of this plant, see Phytologia 51: 340 (1982).

Long & Lakela (1971) comment that in Florida this plant is "possibly a local escape" -- this is actually not a mere possibility, but a fact -- the species is not native in the New World.

It should be noted that because the variegation in this variety apparently very often becomes unnoticeable after the leaves are pressed and dried, the *Brumbach 8262*, *Buswell s.n.* [June 14 & Aug. 21, 1941], *Rohwer s.n.* [July 21, 1963], and *Spence 151*, cited by me as typical *V. trifolia* var. *subtrisecta* (Kuntze) Mold., may actually represent var. *variegata* instead, as, indeed, the collectors in at least some cases have suggested. Because of the 1--3-foliolate nature of the leaves, it would appear that this taxon is actually a form of *V. trifolia* var. *subtrisecta* and probably should be so designated. It seems to have originated naturally rather than horticulturally and therefore does not deserve the cultivar status often assigned to it. It has been collected in flower and fruit from May to August.

Additional citations: HAWAIIAN ISLANDS: Kauai: *Spence 151* (W--2897554). Oahu: *Neal s.n.* [July 9, 1945] (M1). CULTIVATED: Florida: *Lakela 29881* (N); *Schallert 23077* (Mu).

VITEX TRIPINNATA (Lour.) Merr.

Additional & emended synonymy: *Tanaecium tripinna* Steud. in A. DC., Prodr. 9: 248. 1845; Buek, Gen. Spec. Syn. Candoll. 3: 469. 1858. *Vitex annamense* Dop, Bull. Soc. Hist. Nat. Toulouse 57: 203--204. 1928.

Additional & emended bibliography: Lour., Fl. Cochinch., ed. 1, 2: 391--392 (1790) and ed. 2, 476. 1793; A. DC., Prodr. 9: 248. 1845; Buek, Gen. Spec. Syn. Candoll. 3: 469. 1858; Dop, Bull. Soc. Hist. Nat. Toulouse 57: 203--204 & 210--211. 1928; E. D. Merr., Trans. Am. Phil. Soc., ser. 2, 24 (2): 335 & 444. 1935; Fedde & Schust., Justs Bot. Jahresber. 56 (2): 286. 1937; Mold., Phytologia 17: 119--120 (1968) and 18: 421. 1969; Anon., Biol. Abstr. 51 (1): B.A.S.I.C. S.226. 1970; Mold., Biol. Abstr. 51: 460. 1970; Hocking, Excerpt. Bot. A.18: 444. 1971; Mold., Fifth Summ. 1: 293, 298, 303, & 468 (1971) and 2: 640, 644, 645, 713, 720, 776, 930, & 931. 1971; Dournes, Journ. Agric. Trop. Bot. Appl. 20: 26, 52, & 184. 1973; Mold., Phytol. Mem. 2: 282, 288, 289, 290, 294, & 595. 1980; Mold., Phytologia 49: 457. 1981.

Both Hallier (1918) and Dop (1928) provide lengthy and very detailed descriptions of this species. Dournes (1973) encountered it in mountain forests, in flower in July, and notes that "La feuille est parfois utilisée comme masticatoire conjointement au bétel". More recent collectors refer to it as a "common tree in [the] open along rivers" (in Annam, at 300 m. altitude).

Additional & emended citations: VIETNAM: Annam: *Poilane 2747* (W--2602628). Tonkin: *Pételot 6419* (Mi); *Pierre 5869* (W--2694085a).

VITEX TRIPINNATA var. *CLEMENSORUM* Mold.

Additional bibliography: Mold., Phytologia 17: 119 & 120. 1968; Mold., Fifth Summ. 1: 303 (1971) and 2: 931. 1971; Mold., Phytol. Mem. 2: 289, 294, & 595. 1980.

The type collection of this variety has previously been regarded as typical *V. tripinnata* (Lour.) Merr. and some specimens have been so distributed in herbaria.

Additional citations: VIETNAM: Annam: *Clemens & Clemens 3394* (Mi--isotype, W--1427499--isotype).

VITEX TRIPINNATA var. *PUBESCENS* Mold., Phytologia 18: 421. 1969.

Bibliography: Mold., Phytologia 18: 421. 1969; Anon., Biol. Abstr. 51 (1): B.A.S.I.C. S.226. 1970; Mold., Biol. Abstr. 51: 460. 1970; Hocking, Excerpt. Bot. A.18: 444. 1971; Mold., Fifth Summ. 1: 298 & 303 (1971) and 2: 931. 1971; Mold., Phytol. Mem. 2: 288, 290, & 595. 1980; Mold., Phytologia 49: 457. 1981.

Recent collectors describe this plant as a small tree, 4--7 m. tall, the trunk to 15 cm. in diameter at breast height, the lower stems "often with straight thorns 3--4 cm. long", the inflorescence axes and calyx green, the corolla-lobes yellowish, the lower one whitish, the "palate and throat dark-yellow with maroon lines and blotches", and have encountered it in dry evergreen forests, in wet evergreen forests with *Corypha* and *Tetrameles*, and in mixed deciduous-bamboo forests, at 300--400 m. altitude,

in flower in April, and in fruit in October. They report the vernacular name, "sa khang".

Material of this variety has been misidentified and distributed in some herbaria as *V. quinata* (Lour.) F. N. Will. and as typical *V. tripinnata* (Lour.) Merr.

Additional citations: THAILAND: Indrapong & al. 149 (Ac); Larsen, Santisuk, & Warnsck 3273 (Ac, Ld); Maxwell 76-318 (Ac); Suksakorn 941 (Ed). LAOS: Vidal 2201 (Ld--type).

VITEX TRISTIS S. Elliot

Additional bibliography: Mold., Phytologia 17: 120. 1968; Mold., Fifth. Summ. 1: 263 (1971) and 2: 931. 1971; Mold., Phytol. Mem. 2: 252 & 595. 1980.

VITEX TURCZANINOWII Merr., Govt. Lab. Philip. Publ. 35: 77. 1906.

Synonymy: *Vitex altissima* Walp., Nov. Act. Acad. Nat. Cur. 19, Suppl. 1: 380. 1843 [not *V. altissima* Blanco, 1837, nor Heyne, 1955, nor L., 1832, nor L. f., 1791, nor Moon, 1824, nor Naves, 1880, nor Naves ex F. Villar, 1954, nor Roxb., 1829]. *Vitex undulata* Walp., Nov. Act. Acad. Nat. Cur. 19, Suppl. 1: 380 & 383. 1843 [not *V. undulata* Wall., 1829]. *Premna (Gumira) philippinensis* Turcz., Bull. Soc. Nat. Mosc. 36 (2): 215. 1863 [not *Vitex philippinensis* Merr., 1903]. *Viticipremna turczaninowii* (Merr.) H. J. Lam, Verbenac. Malay. Arch. 162. 1919. *Viticipremna philippinensis* (Turcz. H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 47. 1921. *Viticipremna turczaninowii* H. Lam apud E. D. Merr., Enum. Philip. Flow. Pl. 3: 397, in syn. 1923. *Viticipremna philippinensis* H. Lam apud E. D. Merr., Enum. Philip. Flow. Pl. 3: 397, in syn. 1923. *Viticipremna turczaninowii* H. J. Lam apud A. W. Hill, Ind. Kew. Suppl. 6: 85. 1926. *Viticipremna philippinensis* H. J. Lam apud A. W. Hill, Ind. Kew. Suppl. 7: 252. 1929. *Viticipremna turczaninowii* "[Merr.] H. J. Lam" apud Fedde & Schust., Justs Bot. Jahresber. 53 (1): 1077, in syn. 1932. *Vitex denudata* Reinw. ex Mold., Résumé 382, in syn. 1959.

Bibliography: Walp., Nov. Act. Acad. Nat. Cur. 19, Suppl. 1: 380 & 383. 1843; Walp., Repert. Bot. Syst. 4: 84. 1845; Schau. in A. DC., Prodr. 11: 685. 1847; Turcz., Bull. Soc. Nat. Mosc. 36 (2): 215. 1863; Fern.-Villar in Blanco, Fl. Filip., ed. 3, Nov. App. 159. 1880; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 622. 1894; K. Schum. & Lauterb., Fl. Deutsch. Schutzc. Südsee 524. 1900; E. D. Merr., Philip. Journ. Sci. Bot. 1, Suppl. 1: 121. 1906; E. D. Merr., Govt. Lab. Philip. Publ. 35: 77. 1906; Prain, Ind. Kew. Suppl. 3: 189. 1908; D. H. Scott in Solereder [transl.° Boodle & Fritsch], Syst. Anat. Dicot. 1: 633. 1908; E. D. Merr., Spec. Blanc. 333. 1918; H. J. Lam, Verbenac. Malay. Arch. 162--163 & 370. 1919; H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 47. 1921; E. D. Merr., Enum. Philip. Flow. Pl. 3: 397. 1923; H. J. Lam in Lauterb., Engl. Bot. Jahrb. 59: 92. 1924; A. W. Hill, Ind. Kew. Suppl. 6: 85. 1926; Pieper, Engl. Bot. Jahrb. Beibl. 141: 80. 1928; A. W. Hill, Ind. Kew. Suppl. 7: 252. 1929; Wangerin, Justs Bot. Jahresber. 50 (1): 237. 1930; Fedde, Justs Bot. Jahresber. 50 (1): 719. 1932; Fedde & Schust., Justs

Bot. Jahresber. 53 (1): 1077. 1932; Junell, Symb. Bot. Upsal. 1 (4): 94, fig. 144. 1934; Fedde & Schust., Justs Bot. Jahresber. 60 (2): 576--577 & 676. 1941; Wangerin, Justs Bot. Jahresber. 60 (1): 825. 1941; Mold., Alph. List Inv. Names 55. 1942; Mold., Phytologia 2: 123. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 622. 1946; Angely, Cat. Estat. Gen. Bot. Fan. 17: 6. 1956; Mold., Résumé 155, 191, 339, 382, 390, 391, & 479. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 622. 1960; Maun, Philip. Journ. Forest. 16: 108. 1960; Menninger, Flow. Trees World 335. 1962; F. A. Barkley, List Ord. Fam. Anthoph. 76 & 219. 1965; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 7, 1184. 1966; Rouleau, Guide Ind. Kew. 198 & 353. 1970; Balgooy, Blumea Suppl. 6: [Pl. Geogr. Pacif.] 200. 1971; Mold., Fifth Summ. 1: 319 & 329 (1971) and 2: 610, 716, 730, 732, 758, & 931. 1971; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 1214. 1973; Mold., Phytologia 26: 512. 1973; Hegnauer, Chemotax. Pfl. 6 [Vhem. Reihe 21]: 678. 1973; Mold., Phytologia 31: 391 & 399. 1975; L. H. & E. Z. Bailey, Hortus Third 1149. 1976; Mold., Phytologia 44: 219, 221, & 512. 1979; Fosberg, Otobed, Sachet, Oliver, Powell, & Canfield, Vasc. Pl. Palau 38. 1980; Mold., Phytol. Mem. 2: 328, 329, 368, 460, & 596. 1980; Mold., Phytologia 49: 373, 457, & 459 (1981), 50: 253, 255, 267, & 270 (1982), 51: 163 & 274 (1982), and 52: 134. 1982.

Turczaninow's original (1863) description of this is "*Premna ramis acute tetragonis, superne compressis, ad nodos incrassatis; foliis longe petiolatis ovatis, ovato-oblongisve, obtusosculis acuminatis aut vix in petiolum attenuatis, utrinque glabris, supra tamen puncticulis exasperatis; panicula terminali pyramidata cum calycibus corollisque tenuissime puberula; calyce truncato aut denticulis obsoletis instructo; corolla calyce duplo majore ad faucem pubescente; staminibus subdidynamis. Antherae reniformes, loculis discretis divaricatis. *Aegiphila viburnifolia* Juss., cujus specimina tantum fructifera nota, recedit a nostra, corymbis praeter nonnullos axillaribus, caeterum forte eadem est planta. Rami exsiccati nigrescunt. Filamenta in eodem curculo orta, sed interiora duo caeteris paulo breviora. Insulae Philippibae, *Cuming No 1172 et 1294.*" The *Aegiphila viburnifolia* referred to here is a synonym of *Elaeodendron viburnifolium* (A. L. Juss.) Merr., in the *Celastraceae*.*

Merrill (1906) comments that "This species which belongs in *Vitex*, rather than in *Premna*, was based on *Nos. 1172 and 1294* of Cuming's Philippine collection, both these numbers being represented in the herbarium of this Bureau [Bureau of Science, Manila -- the original herbarium now destroyed]. *Premna philippinensis* Turcz. is not mentioned by Vidal (Phan. Cuming. Phillip. 1885) but *No. 1172* is referred by him to *Rourea multiflora* Planch. [*Connaraceae*], and *No. 1294* to *Vitex* sp. indet. Turczaninow evidently described it from fragmentary material, as his diagnosis leads one to infer that the leaves are simple. As his diagnosis in other respects applies exactly to the above

numbers of Cuming's collection in our herbarium, it seems evident that he had only specimens with detached leaflets. The following should be added to the description of the leaf characters. Leaves 5, rarely 4 or 3 foliolate; petioles glabrous, 8 to 10 cm. long; petiolules 1 to 2 cm. long. Flowers yellow. In addition to the two numbers of Cuming's Philippine collection referred by Turczaninow to this species, it is apparently well represented also by No. 1173 Cuming, and the following specimens of more recent collection: Luzon, Province of Bataan, Lamao River (1335 Whitford) (3059 Borden), May, 1905; Province of Rizal, Bosoboso (2951 Ahern's collector), April, 1905; San Mateo (1127 Ahern's collector), May, 1904; Province of Tayabas, Pagbilao (2852 Merrill), April, 1903. Island of Ticao (1096 Clark), May, 1904." On the clipping with this original publication of the name, *Vitex turczaninowii*, in my possession, Merrill has written the date "1905", and Lam (1919) also so dates it. In later publications Merrill dates it "1906". In his 1923 publication he says that this is "A species badly confused with *Vitex heterophylla* Roxb. = *V. quinata* F. N. Will., the type cited by H. J. Lam under both. The leaves are practically glandless, while the flowers are always yellow, not blue. I can see no valid reason for recognizing the genus *Viticipremna*." He lists the species from Batan, Luzon, Mindoro, Ticao, Leyte, and Mindanao on the basis of (in addition to the collections mentioned above) Ahern's Collector 2961, Alambra & Borrromeo 25884, Barros 20465, Bawan 24194, Merrill Philip. Pl. 382, and Peñas, Philip. Forest Bur. 26677. Of the species he says that it is found in forests at low altitudes and is endemic to the Philippine Islands.

Lam (1921) says of this plant: "Leaves 3--5-foliolate; calyx 0.2--0.3 c.M.; corolla always as in *Premna*, 4-lobed, one lobe larger, rounded, 0.2--0.4 c.M., the other 3 obtusely deltoid, 0.15--0.2 c.M.; tube 0.5 c.M.; stamens didynamous, 0.5--0.6 and 0.6--0.75 c.M." He cites from the Bogor herbarium Ahern's Collector 2961, Borden 3059, Clemens s.n., Elmer 16693, Merritt & Darling 14049, and Ramos 1410. He expresses doubt as to whether the Borden and the Merritt & Darling collections really belong here - of the former he notes "an var.?: leaves with simple hairs beneath".

The *Vitex undulata* Wall., referred to in the synonymy (above), is a synonym of *V. quinata* (Lour.) F. N. Will., *V. philippinensis* Merr. is a synonym of *Teijsmanniodendron pteropodum* (Miq.) Bakh., *V. altissima* Names and "Naves ex F. Villar" is *V. parviflora* A. L. Juss., while the *V. altissima* of Linnaeus, Linnaeus filius, Heyne, Moon, and Roxburgh are all *V. altissima* L.f.

Common and vernacular names recorded for *V. turczaninowii* are "boñogon", "hamuráuon-asu", "kalimantau", "kamalan", "liñgo-liñgo", "linolino", "liño-liño", "magomo", "mala-moláve", "malamuláuin", "maláuing-áso", "mala-usd", "mbothawa", "muláuin", "tugas", "tugas-bufogon", "vasung", and "yarokasaw".

Recent collectors have encountered this plant in woods and forests, especially on stream margins, and in sandy soil on low ridges, at 40 m. altitude, in flower from April to August, as well

as in December, and in fruit in May, July, and November. They describe it as a tree, 13--25 m. tall, the bole to 12 m. high, the trunk diameter to 50 cm. at breast height, the buttresses to 1 m. long, the bark yellowish-brown, deeply fissured, with strips 2--4 cm. wide and 4 mm. thick, the living bark 5 mm. wide, yellowish, the wood white, the inflorescence gray, and the flowers fragrant. The corollas are said to have been "dirty-white, the lower lip dark-purple inside" on *Kostermans 6895*, "flower buds green, pink-tinged, the corollas white, purple-tinged in the throat within" on *Smith 8881*, and "purple-white and green" on *Wenzel 2758* -- all this in spite of Merrill's emphatic statement that the corolla in *V. turczaninowii* is always yellow, while in the similar *V. quinata* it is blue. Probably these collections should be re-examined.

Vitex denudata appears to be based on an unnumbered Reinwardt collection deposited in the Vienna herbarium.

In *Phytologia* 49: 371--372 (1981) there is a discussion of Blanco's *V. latifolia*, *V. geniculata*, and *V. altissima* and Merrill's opinion that the 5-foliolate specimens mentioned by Blanco refer to *V. turczaninowii*.

It is perhaps also worth mentioning here that the Schumann & Lauterbach (1900) reference in the bibliography (above) is often mis-cited as "1901". Walpers (1845) is erroneously cited by Merrill (1923) as "1844", but pages 1--192 of the volume concerned here were actually not issued until 1845; Merrill (1906) also mis-cites the Fernandez-Villar (1880) reference as "1883".

The *Merrill 2162* collection is sterile and exhibits 3- and 5-foliolate leaves -- it may prove not to belong to this species. Similarly, *Curran, Philip. Forest Bur. 10338* is also sterile and is very anomalous in general appearance -- it exhibits a pair of unifoliolate leaves in addition to the usual 3-foliolate ones. It may not be placed here correctly.

Material of *V. turczaninowii* has been abundantly misidentified and distributed in some herbaria, and even cited by me in previous installments of these notes, as *V. quinata* (Lour.) F. N. Will. or as *V. quinata* var. *puberula* (H. J. Lam) Mold. On the other hand, the *Ahern's Collector 2961* and *Ramos & Edaño, Philip. Bur. Sci. 45318*, distributed as *V. turczaninowii*, seem actually better regarded as representing *V. quinata* (Lour.) F. N. Will., while *Ramos, Philip. Bur. Sci. 1410* and *Whitford 1335* are *V. turczaninowii* f. *puberula* (H. J. Lam) Mold. and *Borden, Philip. Forest Bur. 3059* is *V. velutina* (Koord. & Val.) Koord.

Citations: KOREAN COASTAL ISLANDS: Botel Tobago: *Chang 15019* (W--2920633). PHILIPPINE ISLANDS: Batangas: *Loator s.n.* [Gates 8408] (M1). Leyte: *Wenzel 809* (W--1238085), 1399 (N). Luzon: *Ahern's Collector, Philip. Forest Bur. 1127* (N, W--851239), 2961 (Bz--25362, N, Po--64780, W--852149); *Bartlett 15339* (M1), 15374 (M1); *Bawan, Philip. Forest Bur. 24194* (W--1290183); *Bridges, Philip. Forest Bur. 5167* (N, W--709268); *M. S. Clemens 15848* (Ca--260653); *Cuming 1172* [Herb. Reichenbach f. 158525, 158526, & 158527] (E--116194--cotype, Ld--photo of cotype, Mu--1465--cotype,

N--photo of cotype, V--cotype, V--cotype, V--cotype), 1294 (N--cotype); *H. M. Curran*, *Philip. Forest Bur.* 5837 (Br), 10338 (W--708781), 10505 (Br), 10639 (Br); *Elmer* 16693 (Bi, Bz--25368, Ca--271800, Mi, N, S, Ut--67346, W--897398); *Loher* 12537 (Ca--243057); *Manuel*, *Philip. Forest Bur.* 23490 (W--1376032); *E. D. Merrill* 2196 (W--437144), 2852 (N, W--437822); *Merritt & Darling*, *Philip. Forest Bur.* 14049 (Bz--25366); *M. Ramos* 382 (Mu--4276, Ut--22208, W--1178292), *Philip. Bur. Sci.* 1410 (Bz--25363, N. W--626588); *Ramos & Edaño*, *Philip. Bur. Sci.* 45318 (Bz--25361, Ca--308842, N, Pd); *Villamil* 258 [*Herb. Philip. Forest Bur.* 20294] (Ka--64784); *Whitford* 1335 (N, W--852078). *Mindanao: M. S. Clemens s.n.* [Camp Keithley, July 1907] (Bz--25364, Bz--25365, Bz--25367, Mu--4107, Mu--4706, Mu, W--850229); *Sherfese, Cenabre, & Ponce*, *Philip. Forest Bur.* 21668 (W--837748); *Villamil*, *Philip. Forest Bur.* 22017 (W--1238300); *Wenzel* 2523 (Mi), 2563 (Br, Mu, N, N), 2758 (Ca--316959), 2760 (B), 3430 (Br, Ca--354967, Cp, Mu, N, N). *Mindoro: E. D. Merrill* 2162 (W--437110); *Merritt*, *Philip. Forest Bur.* 9912 (N). *Ticao: W. W. Clark*, *Philip. Forest Bur.* 1096 (W--626200). *GREATER SUNDA ISLANDS: Borneo: Kostermans* 6895 (Ba). *Java: Reinwardt s.n.* (V). *FIJI ISLANDS: Viti Levu: O. Degener* 14481 (W--1943746); *A. C. Smith* 4307 (W--1965194), 6295 (W--1966528), 8881 (W--2191502).

VITEX TURCZANINOWII f. *PUBERULA* (H. J. Lam) Mold., *Phytologia* 51: 163. 1982.

Synonymy: *Vitex heterophylla* var. *puberula* H. J. Lam, *Verbenac. Malay. Arch.* 189 [as "(Miq.) H. J. Lam"]. 1919. *Vitex heterophylla* var. *puberula* (Miq.) H. J. Lam, *Verbenac. Malay. Arch.* 189. 1919. *Vitex quinata* var. *puberula* (H. J. Lam) Mold., *Phytologia* 3: 489. 1951. *Vitex mindanaensis* Merr. ex Mold., *Résumé Suppl.* 4: 21, in syn. 1962.

Additional bibliography [for earlier lists see *Phytologia* 6: 103 (1957), 8: 77 (1961), 17: 31 (1968), and 49: 458. 1981]: H. J. Lam in Lam & Bakh., *Bull. Jard. Bot. Buitenz.*, ser. 3, 3: 47. 1921; Mold., *Phytologia* 51: 163 (1982) and 52: 134. 1982.

Brooke describes this plant as a medium-sized tree and found it growing in light forests at 1000 m. altitude, flowering in August.

Material of this form has been widely mis-identified and distributed in herbaria as *V. quinata* (Lour.) F. N. Will. On the other hand, the *Canton Chr. Coll.* 12613, *Ching* 5552, *Curran*, *Philip. Forest Bur.* 10338, *Keng* 1369, *Merrill* 2196, and *Pételot* 963, previously regarded as this form, are now regarded as representing typical *V. quinata* (Lour.) F. N. Will., while *Mungkim* 45115 and *Sutriano* 34 are regarded as typical *V. turczaninowii* Merr.

Additional citations: *PHILIPPINE ISLANDS: Mindanao: Elmer* 11602 (W--873093). *GREATER SUNDA ISLANDS: Celebes: Palit* 16 [Boschproefst. bb.29476] (Mi). *Sarawak: Brooke* 10354 (W--2332023). *Sumatra: Yates* 1609 (Mi). *MOLUCCA ISLANDS: Mangeli: Herb. Neth. Ind. Forest Serv.* bb.29773 (Mi). *AROE ISLANDS: Oedjir: Herb. Neth. Ind. Forest Serv.* bb.2548 (Mi). *FIJI ISLANDS:*

Viti Levu: A. C. Smith 9119 (W--2192126).

VITEX UBANGHENSIS A. Chev.

Additional bibliography: Mold., *Phytologia* 17: 120. 1968; Mold., *Fifth Summ.* 1: 227 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 218 & 595. 1980.

VITEX UMBROSA Sw.

Additional bibliography: Rausch., *Nom. Bot.*, ed. 3, 182. 1797; Willd. in L., *Sp. Pl.*, ed. 4, 3 (2): 392--393. 1802; Sabine, *Trans. Hort. Soc. Lond.* 5: 455. 1824; Sweet, *Hort. Brit.*, ed. 1, 1: 323 (1826) and ed. 2, 416. 1830; Loud., *Hort. Brit.*, ed. 1, 246 (1830) and ed. 2, 246. 1832; G. Don in Loud., *Hort. Brit.*, ed. 3, 246. 1839; G. Don in Sweet, *Hort. Brit.*, ed. 3, 551. 1839; D. Dietr., *Syn. Pl.* 3: 612. 1843; Voigt, *Hort. Suburb. Calc.* 473. 1845; Walp., *Repert. Bot. Syst.* 4: 87--88. 1845; Schau., *Linnaea* 20: 483. 1847; Schau. in A. DC., *Prodr.* 11: 687. 1847; Buek, *Gen. Spec. Syn. Candoll.* 3: 502. 1858; Ulrich, *Internat. Wörterb.*, ed. 1, 254 (1871) and ed. 2, 254. 1875; Knuth, *Feddes Repert. Spec. Nov. Beih.* 43: [Init. Fl. Venez.] 607. 1927; Ekman, *Arkiv Bot. Stockh.* 22A: 51. 1929; Mold., *Phytologia* 1: 103 (1934) and 17: 120. 1968; Mold., *Biol. Abstr.* 49: 11291. 1968; Hocking, *Excerpt. Bot. A.15*: 421. 1970; Mold., *Fifth Summ.* 1: 101 (1971) and 2: 573 & 931. 1971; Adams, *Flow. Pl. Jamaica* 636, 791, & 846. 1972; Alemán Frías, Aurich, Excurra Ferrer, Gutiérrez Vázquez, Horstmann, López Rendueles, Rodríguez Graquitená, Roquel Casabella, & Schreiber, *Die Kulturpfl.* 19: 423. 1972; Farnsworth, *Pharmacog. Titles* 8 (8): xxiii. 1973; León & Alain, *Fl. Cuba*, ed. 2, 2: 318. 1974; Mold., *Phytologia* 32: 338. 1975; López-Palacios, *Fl. Venez. Verb.* 595 & 654. 1977; Mold., *Phytologia* 44: 416. 1979; Mold., *Phytol. Mem.* 2: 94, 363, 423, & 595. 1980; Mold., *Phytologia* 48: 486. 1981.

Although this species was originally described from Jamaica and Rauschell (1797) lists it from "Jamaica" and both Loudon (1832) and Sweet (1830) correctly credit it to the "W. Indies", Dietrich (1843) amazingly attributes it to "Ind. or." [eastern India]. The species is actually endemic to Jamaica. According to Loudon and Sweet, it was introduced into cultivation in England in 1824, and they call it the "bushy chaste-tree". Ekman (1929) avers that it grows "Throughout Haiti", but the species he is referring to is the very similar *V. heptaphylla* A. L. Juss. Similarly, Knuth (1927) records it from Venezuela on the basis of Pittier 8883, but the Venezuelan plant is *V. compressa* Turcz.

Adams (1972) describes the true *V. umbrosa* as a "Tree 8--15 m. high; bark flaky; trunk up to 1 m. in diameter, fluted at base; leaves with (4) 5 (-6) leaflets; leaflets elliptic-lanceolate, broadly cuneate to rounded at base, obtuse to shortly and bluntly acuminate at tip, up to 20 cm. long and 8.5 cm. broad; petioles up to 11 cm. long; petiolules 0.6--4.5 cm.; inflorescences axillary; calyx 3--5 mm. long; corolla purple to blue-violet, hairy, about 14 mm. long; drupe yellow." He states that in Jamaica the tree is occasional in pasture margins and on wooded hillsides, from 500 to

1800 feet altitude, flowering from May to September, and fruiting from June to September. He cites *Harris 10579 & 11975* and *Proctor 19783*, and notes "Probably endemic, although reported from Hispaniola" -- as stated above, the Hispaniolan plant is *Vitex heptaphylla*.

Recent collectors refer to *V. umbrosa* as a tree, 30--50 feet tall, the trunk to 50 cm. in diameter at breast height, the leaves light-green, the flowers scented, and the fruit orange in color, and have encountered it on wooded limestone hillsides and steep forested hillsides, at 1000--1400 feet altitude, in fruit in June and September. Stearn describes the corolla as "purple with a yellow blotch at the top of the lower lip". The *Proctor 19783* collection is accompanied by a wood sample.

The *Ekman H.12643* and *Valeur 630, 936, & 972*, distributed as *V. umbrosa*, are *V. heptaphylla* A. L. Juss.

Additional citations: JAMAICA: *Proctor 19783* (W--2585137); 36296 (N); *Stearn 974* (Ba).

VITEX UNIFLORA J. G. Baker

Additional bibliography: Mold., *Phytologia* 17: 240. 1968; Mold., *Biol. Abstr.* 50: 942. 1969; Hocking, *Excerpt. Bot. A.15:* 421. 1970; Mold., *Fifth Summ.* 1: 264 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 252 & 595. 1980.

VITEX URCEOLATA C. B. Clarke

Additional synonymy: *Vitex n. 12* Hook. f. & Thoms. ex C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 585, in syn. 1885.

Additional & emended bibliography: C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 585--586. 1885; Forbes & Hemsl., *Journ. Linn. Soc. Lond. Bot.* 26 [*Ind. Fl. Sin.* 2]: 259. 1890; Parkington, *Forest Fl. Andam.*, imp. 1, 220 & 221. 1922; Dop, *Bull. Soc. Hist. Nat. Toulouse* 57: 201, 210, & 211. 1928; H. N. & A. L. Mold., *Pl. Life* 2: 70. 1948; Mold., *Phytologia* 17: 240--241. 1968; Mold., *Fifth Summ.* 1: 279, 285, 291, 298, 303, 307, 314, & 329 (1971) and 2: 572, 718, 721, 728, & 931. 1971; Mold., *Phytologia* 23: 438. 1972; Parkington, *Forest Fl. Andam.*, imp. 2, 220 & 221. 1972; Mold., *Phytol. Mem.* 2: 266, 274, 275, 280, 288, 294, 298, 305, 319, 460, & 595. 1980; Mold., *Phytologia* 46: 466 & 483 (1980), 49: 452 (1981), 50: 252 (1982), and 51: 282. 1982.

Clarke's original (1885) description of this taxon is "leaves 3-foliolate glabrate, leaflets petioluled obovate shortly suddenly acuminate entire, panicles compound thinly cinereous-tomentose branches elongate, calyx 1/8 -- 1/16 in. oblong or suburceolate, corolla tomentose....A medium-sized tree (Maingay). Leaves (all the upper) 3-foliolate, a small leaflet rarely added; leaflets 5 by 2 1/4 in., obtuse, tip usually less than 1/4 in., with scattered white glands above and yellow beneath, petiolule of the middle leaflet often 1/2 in.; petiole 1--2 in., not winged. Panicles 8 by 5 in., terminal, penultimate sometimes added; cymes densely flowered clustered along the branches; bracts 1/8 in., linear, deciduous. Calyx minutely toothed at flower-time, much en-

larged, 1/2 in. diam. roundly 4-lobed in fruit. Corolla 1/4 -- 1/2 in., apiculate. This species differs from all the preceding by (inter alia) the large drupe. The inflorescence, calyx, corolla and drupe are so like those of *V. sumatrana* (Miq. Fl. Ind. Bat. Suppl. 567), that it may be a var. of it; but in *V. sumatrana* the leaves are mostly 5-foliolate and pubescent beneath." He cites as synonyms, *V. heterophylla* Schau., *V. loureirii* Wight, and *Vitex* n. 12 Hook. f. & Thoms., in herb. He cites Griffith 6064 and Maingay 1205 & 1207, from Malacca, as cotype collections.

Dunn & Tutchter (1912) cite *V. urceolata* from the Lienchow River, describing the corollas as "yellow", and found it in flower there in August. Parkinson (1922) records it from both North and South Andaman Islands. Fletcher (1938) cites Put 992 & 1507 from Thailand.

Dop (1928) cites Poilane 7450 & 7696 from Annam and Balansa 4885 and Bon 832, 1207, 1646, 1748, 6001, & 6202 from Tonkin, Vietnam. He comments that "Cette espèce me paraît avoir été souvent confondue avec le *V. quinata* Williams, avec lequel elle présente une ressemblance telle que Koorders et Valetton ont réuni les deux espèces. Cependant, il existe un caractère important très net sur lequel King et Gamble....ainsi que Lam....ont insisté: c'est que la corolle est entièrement glabre en dedans dans *V. sumatrana* et n'offre pas l'anneau de poils blancs que l'on observe dans presque tous les *Vitex* à l'insertion des étamines. J'ai pu m'assurer que la forme des folioles (non acuminées ou courtement et brusquement ou longuement acuminées) n'avait aucune valeur différentielle. J'ai la conviction que la plupart des plantes chinoises rapportées au *V. quinata* Williams appartiennent au *V. sumatrana* var. *urceolata*. Les échantillons récoltés à Hai nan par Henry (Herbier du Museum) appartiennent sans aucun doute à cette dernière espèce."

It seems most probable to me that *V. urceolata* will eventually be found to represent a species of *Teijsmanniodendron*, rather than *Vitex*.

Recent collectors describe this plant as a stocky tree, 25--75 feet tall, the trunk to 1 foot in diameter at breast height, the wood moderately soft, whitish, soon discoloring to a dirty-white, odorless and tasteless, the bark thick, grayish-white, finely checked, the branches numerous above the middle, forming a dense elongated crown, the twigs ascending, greenish-brown, with elongated lighter brown lenticels, the petioles green, ascending, the leaflets horizontally recurved, strongly conduplicate on the upper subcluid and darker-green surface, thickly coriaceous, the inflorescence erect, greenish, slightly fragrant, the corolla creamy-whitish (Elmer 11602), and the anthers purple-brown. They have found it growing in open grassland with fertile soil and in primary or virgin forests on red soil, at 3250 feet altitude, fruiting in November and December. They have recorded the vernacular name, "topas".

Material of this species has been misidentified and distributed in herbaria as *V. celebica* Koord., *V. glabrata* R. Br., *V. venosa* H. J. Lam, *V. pentaphylla* Merr., and *Teijsmanniodendron coriaceum* (C. B. Clarke) Kosterm.

Additional citations: BURMA: Karenni: Kurz 1047 (Mu--1793). Tenasserim: *Helper* 6068 (Mu--1355). MALAYA: Malacca: *Griffith* 6064 (Ld--cotype, Mu--692--cotype). PHILIPPINE ISLANDS: Mindanao: *Elmer* 11602 (Bz--24120, N, Vt). GREATER SUNDA ISLANDS: Sumatra: *Krukoff* 4244 (Br, Br, Bz--25428, E--1107115), 4339 (Br, Br, Bz--25429, E--1113015); *Yates* 1609 (N).

VITEX VANSTEENISI Mold.

Additional citations: Mold., *Phytologia* 17: 241. 1968; Mold., *Fifth Summ.* 1: 329 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 319 & 595. 1980.

VITEX VAUTHIERI P. DC.

Additional bibliography: *Buek*, *Gen. Spec. Syn. Candoll.* 3: 502. 1858; H. N. & A. L. Mold., *Pl. Life* 2: 70 & 87. 1948; Mold., *Phytologia* 17: 241. 1968; *Angely*, *Fl. Anal. Fitogeogr. Est. S. Paulo*, ed. 1, 4: 829 & xix. 1971; Mold., *Fifth Summ.* 1: 180, 375, & 396 (1971) and 2: 614, 727, & 931. 1971; Mold., *Phytol. Mem.* 2: 172, 368, & 595. 1980; Mold., *Phytologia* 50: 248. 1982.

Recent collectors describe this plant as a common tree, sun-loving, to 5 m. tall, and have encountered it in capoeira, in flower in October, and in fruit in February and October. The corollas are said to have been "blue" on *Murça Pires & Furtado* 17330 and the fruit "rose" on *Araujo & Maciel* 4312.

It should be noted that the *Angely* publication, cited above, is usually cited as "1970" (the titlepage date), but was not actually published until 1971.

Material has been misidentified and distributed in some herbaria as *V. taruma* Mart.

Additional citations: BRAZIL: Mato Grosso: *Murça Pires & Furtado* 17330 (Ld). Rio de Janeiro: *Araujo & Maciel* 4312 [*Herb. FEEMA* 19195] (Ld). São Paulo: *Puiggari* 957 (P).

VITEX VELUTINA (Koord. & Val.) Koord.

Additional & emended bibliography: *Koord.*, *Exkursionsfl.* 3: 137 & 495. 1912; E. D. Merr., *Enum. Philip. Flow. Pl.* 3: 398. 1923; *Janssonius*, *Mikrogr. Holz.* 754, 758, 761, 763, 764, 767, & 822--824. 1926; *Heyne*, *Nutt. Plant. Ned. Ind.*, ed. 2, 1: 24 (1927) and ed. 2, 2: 1320. 1927; *Janssonius*, *Key Java. Woods* 54--55. 1952; Mold., *Phytologia* 17: 241. 1968; Mold., *Fifth Summ.* 1: 319 & 329 (1971) and 2: 718, 731, & 931. 1971; Mold., *Phytol. Mem.* 2: 309, 319, & 595. 1980; Mold., *Phytologia* 49: 454 & 455. 1981.

Heyne (1917) lists this plant only from Kambangan, where, he says, its wood is used in house construction. *Janssonius* (1926) gives a very detailed description of the wood anatomy, which he says is very similar to that of *V. pinnata* L. He describes the plant as a tree to 20 m. tall, the trunk to 40 cm. in diameter and rather straight. "Bast mit grauer Aussenseite. Holz von den Eingeborenen für den Bau von Häusern nur wenig benutzt." In his 1952 work he notes: "The uni-seriate medullary rays numerous. The number of the vessels 5 to 15 to the mm. of the transverse section. Wood rather coarse-textured, not flexible, not tough, specif-

ic gravity 0.47."

Merrill (1923) says that this is "A Javan and Sumatran species to which H. Lam refers *F. B. 3059 Borden*, which is matched by *Whitford 1335* and *F. B. 25884 Alambra & Borrromeo*, all from Bataan Province, Luzon. This form has yellow flowers and appears to me to be more clearly allied to *Vitex turczaninowii* Merr. than to *V. heterophylla* Roxb. = *V. quinata* (Lour.) F. N. Will., which has blue flowers, and to which *V. velutina* Koord. is closely allied.

Additional citations" PHILIPPINE ISLANDS: Luzon: *Borden, Philip. Forest Bur. 3059* (Po--64777, W--850963).

VITEX VENULOSA Mold.

Additional bibliography: Mold., *Phytologia* 17: 241. 1968; Mold., *Fifth Summ.* 1: 232 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 222 & 595. 1980.

VITEX VERMOESENSI DeWild.

Additional bibliography: Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 404. 1938; Mold., *Phytologia* 17: 241. 1968; Mold., *Fifth Summ.* 1: 232 & 245 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 222, 235, & 595. 1980.

VITEX VERTICILLATA A. Chev.

Additional bibliography: Mold., *Phytologia* 17: 241--242. 1968; Mold., *Fifth Summ.* 1: 227 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 218 & 595. 1980.

VITEX VESTITA Wall.

Additional synonymy: *Vitex vestiat* Wall. ex Mold., *Fifth Summ.* 2: 731, in syn. 1971. *Vitex vestita* Griff. ex Mold., *Phytol. Mem.* 2: 460, in syn. 1980. *Vitex lanceifolia* Liu & Yu, *Act. Bot. Yunnan.* 2: 455. 1980. *Vitex vestite* Wall. ex Mold., *Phytologia* 50: 267, in syn. 1982.

Additional & emended bibliography: Walp., *Repert. Bot. Syst.* 4: 85 & 91. 1845; Buek, *Gen. Spec. Syn. Candol.* 3: 502. 1858; Bocq. in *Baill., Rec. Obs. Bot.* 3: 253. 1863; Kurz, *Forest Fl. Brit. Burma* 2: 272--273 & 612. 1877; C. B. Clarke in *Hook. f., Fl. Brit. India* 4: 587 & 588. 1885; Collett & Hemsl., *Journ. Linn. Soc. Lond. Bot.* 28: 111. 1890; Briq. in *Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4* (3a): 172. 1895; Greshoff, *Meded. Lands Plant.* 29: 126. 1900; Ridl., *Agric. Bull. Straits Fed. Mal. St.* 1: 219. 1902; Brandis, *Indian Trees, imp. 1*, 505 (1906) and *imp. 3*, 505. 1911; W. W. Sm., *Notes Roy. Bot. Gard. Edinb.* 9: 141. 1916; H. Hallier, *Meded. Rijks Herb. Leid.* 37: 48 & 54. 1918; E. D. Merr., *Bibl. Enum. Born. Pl.* 515. 1921; Ridl., *Fl. Malay Penins.* 2: 635. 1923; Heyne, *Nutt. Plant. Ned. Ind., ed. 2, 1*: 24 (1927) and *ed. 2, 2*: 1320. 1927; Dop, *Bull. Soc. Hist. Nat. Toulouse* 57: 207 & 211. 1928; Fedde & Schust., *Justs Bot. Jahresber.* 53 (1): 1077. 1932; Dop in *Lecomte, Fl. Gén. Indo-chine* 4: 839. 1935; Fletcher, *Kew Bull. Misc. Inf.* 1938: 405, 432, & 436. 1938; Kanjilal, Das, Kanjilal, & De, *Fl. Assam* 3: 458, 478--485, & 561. 1939; Corner, *Way-side Trees, ed. 2*, 707 & 711. 1952; Burkill, *Dict. Econ. Prod. Ma-*

lay Penins. 2: 2282. 1966; Mold., Phytologia 17: 242--243. 1968; Mold., Résumé Suppl. 17: 12. 1968; Brandis, Indian Trees, imp. 5, 505. 1971; Mold., Fifth Summ. 1: 279, 284, 291, 298, 303, 307, 309, 331, & 375 (1971) and 2: 717, 720, 722, 723, 731, & 931. 1971; Chan & Teo, Chem. Pharm. Bull. 20: 1582--1584. 1972; Farnsworth, Pharmacog. Titles 8 (1): xvii. 1973; Mold., Phytologia 28: 445 (1974) and 34: 20, 264, 266, & 280. 1976; Mold., Biol. Abstr. 65: 6769. 1978; Mold., Phytologia 38: 308 (1978) and 44: 486. 1979; Hocking, Excerpt. Bot. A.33: 86. 1979; Liu & Yu, Act. Bot. Yunnan 2: 455. 1980; Mold., Phytol. Mem. 2: 266, 274, 280, 288, 290, 294, 298, 319, 321, 368, 460, & 595. 1980; Mold., Phytologia 49: 182 (1981) and 50: 254, 267, & 270. 1982.

Kanjilal and his associates (1939) list this species from Assam. Burkill (1966) refers to it as "A small tree found from Burma to western Malaysia; in the [Malay] Peninsula it is found in the southern half and in Penang. The wood is white and not durable. It is used as fuel and for rafters." Greshoff (1900) avers that extracts from the plant are said to produce abortion, but he gives no details. Burkill states that the vernacular name, "bangas", is usually applied to *Memecylon* and "chichah" is applied to *Vitex velutina* "in confusion with *Whitfordiodendron*, &c." and "tampang besi" "in confusion with *Clerodendron*". He also thinks that the name, "kepayan", may be applied to *Vitex vestita* in error.

Miquel (1860) records the vernacular names, "madang-alahan" and "marambang". Collette & Hemsley (1890) list the species from the Shan Hills [Burma] at 4000 feet altitude, giving its overall distribution, as known to them, as "Burma to Malacca, Sumatra, Java, and Borneo". Williams (1905) cites Schmidt 294 & 434.

Heyne (1917) refers to the species as a tree, to 40 m. tall or more, "op het Maleische Schiereiland veelvuldig voorkomend. Het lichte, witachtig reekleurige hout wordt gebruikt voor daksparran en brandhout; het is veel minder in kwaliteit dan het van *V. pubescens*" Vahl.

Hallier (1918) cites Wallich 1750b from Penang, two unnumbered Korthals collections from Sumatra, and Beccari 1633 from Sarawak. As to its distribution, he says: "Murmah, nach Babel Halbinsel Malakka und Singapur. Das von Clarke behauptete Vorkommen auf Java ist zweifelhaft, da die von Dr. Ploem usw. gesammelten Exemplaren in Hb. L.-B. auch aus dem Hort. Bogor. stammen können." Dop (1928) cites only Wallich 1750, as well as Spire 462 from Laos. Fletcher (1938) cites, from Thailand, only Kerr 6238 and Schmidt 434, giving its distribution, as known to him, as Burma, China, Laos, and Penang.

Corner (1952) calls it the "common yellow vitex" and describes it as "A small tree like *V. gamosepala* but:-- Twigs, inflorescences and undersides of the leaves clothed with fine hairs: leaflets with 8--10 pairs of side-veins. Flowers rather smaller: calyx with 5 minute teeth"; listing it as only from Burma and western Malaysia, "frequent in Malaya".

Recent collectors describe *V. vestita* as a small or medium-sized

tree or treelet, 5--21 m. tall, or as a shrub or undershrub [or, according to Stone, a climbing vine], the bole often 12--25 feet high, the trunk crooked, often 8--15 cm. in diameter at breast height and a girth of 90 cm., the bark smooth or scaly, gray or grayish to grayish-brown, light-brown, or brown, often light-gray and brown mottled, the outer bark often green, the inner bark pale-gray or gray to almost white, sometimes yellowish to pale-orange, the sapwood white, pale-yellow, or yellowish to pale-orange, the twigs "covered with tomentum", the leaves 3--5-foliolate, completely hairy or merely pubescent along the veins, covered with tiny golden scales between the veins, the petioles and secondaries covered with very fine, thin, brown hairs, the whole inflorescence softly pubescent, the inflorescence-axes greenish, covered with very fine, thin, brown hairs, pedicels green, the flowers 1/4 inch long, the calyx green or greenish, softly pubescent, the corollas bilabiate, softly pubescent, the anthers gray or with a dark-gray rim, the filaments yellow, the pistil white, and the immature fruit green or greenish to light-yellowish, maturing through yellowish-green and greenish-brown to black, berry-like, 1/4 inch in diameter. The corollas are said to have been "yellowish" on *Aban SAN.93083*, "greenish-yellow" on *Aban & Petrus SAN.90667* and *Binideh SAN.63163*, "chrome-yellow" on *Banyang & Sibat S.21522*, "lemon-yellow" on *Clemens & Clemens 29758a*, "yellow" on *Charenphoel & al. 1975*, *Hardial 343*, *Ilias & al. S. 34160*, *Iwaksute & al. M.13686*, *Larsen & Larsen 32697*, *Maxwell 77-13*, *Mujin SAN.18842*, *Sinclair 4785*, *Syme & al. 6667*, and *Tur-nau 886*, "white" on *Larsen & al. 31575*, and "pale-rose" on *Kingdon-Ward 17627*.

Collectors have found this plant growing in both primary and secondary forests, in mixed dipterocarp and swamp forests, on gentle slopes covered with old secondary forests, on hillsides and forested rocky mountainsides, on ridges and sandstone ridgetops, in evergreen forests and open areas in them, in logged-over areas and disturbed ground, in red and sandy soils, along streams, trails, and roadsides, on riverbanks, in lowland areas, and on steep slopes in rich clay soil, as well as in riverine jungles and at the edges of marshes, from sealevel to 1800 m. altitude, in flower in January, February, April to June, and August to November, and in fruit from December to March, as well as from June to October. The additional vernacular name, "bóte-bóte", has been recorded.

Stone makes the remarkable statements (for his no. 6667) that the plant was a "vine, leaves trifoliolate, flowers and inflorescence-axes dotted with tiny yellow glands, calyx 2-toothed, ovary conic, yellow, fruit purplish-black" and (for his no. 6157) "a climber, leaves pinnate, flowers yellow, tubular, bilabiate".

Clarke (1885) comments that the characters of the inflorescences of *V. vestita* clearly point to a close affinity with *V. gamosepala* W. Griff. in the Subgenus *Glossocalyx*.

Material of *V. vestita* has been misidentified and distributed in some herbaria as "*Rubiaceae*" and as *Evodia* sp. On the other hand, the *Sinclair 9887*, distributed as typical *V. vestita*, is re-

garded by me as the type collection of its var. *bracteata* Mold., while *Toroës* 4698 & 5230 are f. *glabrescens* Mold. (the former number being the type collection), *Maxwell* 73-232 is the type collection of f. *quinquefoliolata* Mold., and *Jong* 4517 is *V. longisepala* var. *longipes* Mold.

Additional citations: INDIA: East Punjab: *Kingdon-Ward* 17627 (N). THAILAND: *Charoenphol*, *Larsen*, & *Warncke* 3975 (Ac); *Larsen* & *Larsen* 32697 (Ac, Ld); *Larsen*, *Larsen*, *Nielsen*, & *Santisuk* 31575 (Ac); *Murata*, *Fukuoka*, & *Phengklai* T.17428 (Ac), T.17429 (Ac), T.17473 (Ac). MALAYA: Johore: *Ahmad* S.351 (Kl--13085). Pahang: *Iwatsuki*, *Fukuoka*, & *Hutch* M.13686 (Ac); *Turnau* 886 (Kl--2885). Penang: *C. Curtis* 265 (Pd), 395 (Pd); *B. C. Stone* 6157 (Kl--5809); *Stone*, *Kam*, & *Beltran* 11696 (Kl--19390); *Wallich* 1750 (Pd), 1750b (Mu--1354, Pd). Selangor: *Nur* 34436 (W--2608302); *Poore* 1006 (Kl--6006), 1193 (Kl--6194); *Sider* 13197 (Ne--29777), s.n. [May 1969] (Ne--13716); *B. C. Stone* 6667 (Kl--6250). Singapore: *Cantley* 125 (Pd); *Hardial* 343 (N); *Maxwell* 77-13 (Ac); *Sinclair* 4785 (W--2913179). GREATER SUNDA ISLANDS: Sabah: *Aban* SAN.31162 (Ld), SAN.93038 (Ld); *Aban* & *Petrus* SAN.90667 (Ld); *Bidin* SAN.84805 (Ld); *Binideh* SAN.63163 (Sn); *Clemens* & *Clemens* 29758a (Mu); *Madani* SAN.92061 (Ld); *Mikil* SAN.31436 (Ld); *Mujin* SAN.18842 (Ld); *J. Singh* SAN.31115 (N); *Talib* & *Marsal* SAN.84840 (Ld). Sarawak: *Banying* & *Sibat* S.21522 (W--2902891); *Ilias* & al. S.34160 (Ac, Ld); *Mamit* s.n. [Herb. Sarawak Forest. Dept. S. 33435] (Ld). Sumatra: *Boeea* 7049 (W--1681965); *Krukoff* 319 (Mi, Mi, W--1702620), 4117 (W--1750545); *Toroës* 4238 (W--1681373), 4497 (W--1681385); *Yates* 2140 (Pd).

VITEX VESTITA var. *BRACTEATA* Mold., *Phytologia* 38: 308. 1978.

Bibliography: Mold., *Biol. Abstr.* 65: 6769. 1978; Mold., *Phytologia* 38: 308. 1978; *Hocking*, *Excerpt. Bot. A.*33: 86. 1979; Mold., *Phytol. Mem.* 2: 298 & 595. 1980.

Citations: MALAYA: Perak: *J. Sinclair* 9887 (Mu--isotype, N--type, W--29446132--isotype).

VITEX VESTITA f. *GLABRESCENS* Mold.

Additional bibliography: Mold., *Phytologia* 17: 243. 1968; Mold., *Fifth Summ.* 1: 329 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 319 & 595. 1980.

Toroës refers to this plant as a treelet. Material has been distributed in some herbaria as typical *V. vestita* Wall.

Additional citations: GREATER SUNDA ISLANDS: Sumatra: *Toroës* 4698 (W--1681007--isotype), 5230 (W--1681611).

VITEX VESTITA f. *MILLSII* (Henderson) Mold.

Additional bibliography: *Fedde* & *Schust.*, *Justs Bot. Jahresber.* 59 (2): 417. 1939; Mold., *Phytologia* 17: 243. 1968; Mold., *Fifth Summ.* 1: 307 (1971) and 2: 931. 1971; Mold., *Phytologia* 34: 266. 1976; Mold., *Phytol. Mem.* 2: 298 & 595. 1980.

Recent collectors refer to this plant as a small tree and have found it growing along logging roads, at 1200 feet altitude,

fruiting in July.

Additional citations: MALAYA: Pahang: *Collector undetermined 8082* (K1--8082). Selangor: *B. C. Stone 5879* (K1--5593).

VITEX VESTITA f. *QUINQUEFOLIOLATA* Mold., *Phytologia* 34: 20. 1976.

Bibliography: Mold., *Phytologia* 34: 20 & 264. 1976; Mold., *Phytol. Mem.* 2: 288 & 595. 1980.

Citations: THAILAND: *Maxwell 73-232* (Ac--type).

VITEX VESTITA var. *SIAMICA* Mold.

Additional bibliography: Mold., *Phytologia* 17: 243. 1968; Mold., *Fifth Summ.* 1: 298 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 288 & 595. 1980.

VITEX VESTITA f. *UNIFOLIOLATA* Mold., *Phytologia* 49: 182. 1981.

Bibliography: Mold., *Phytologia* 49: 182 (1981) and 50: 254 & 270. 1982.

The type locality of this taxon is on the track from Kampung Seldok northeast to the large blang south of the summit of Gunung Bandahara, about 25 km. north-northwest of Kutajane, at 1000 m. altitude. The collectors describe the plant as "scandent", to 8 m. long, the calyx brownish-green, the corolla whitish, and the young fruit subglobose, glossy-green, about 5 mm. in diameter, and have distributed it to herbaria misidentified as *Clerodendrum* sp.

Citations: GREATER SUNDA ISLANDS: Sumatra: *DeWilde & DeWilde-Duyfjee 13415* (Ld--photo of type, W--2921051--type).

VITEX VESTITA f. *WINKLERI* Mold.

Additional bibliography: Mold., *Phytologia* 17: 243. 1968; Mold., *Fifth Summ.* 1: 329 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 319 & 595. 1980.

VITEX VILLOSA Sim.

Additional bibliography: Fedde & Schust., *Justs Bot. Jahresber.* 39 (2): 320. 1913; Mold., *Phytologia* 17: 243. 1968; Mold., *Fifth Summ.* 1: 253 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 242 & 595. 1980.

VITEX VOLKENSII Gürke

Additional & emended bibliography: J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 315 & 318. 1900; Mold., *Phytologia* 17: 243--244. 1968; Mold., *Fifth Summ.* 1: 232, 239, & 242 (1971) and 2: 716, 718, & 931. 1971; Mold., *Phytol. Mem.* 2: 222, 228, 232, & 595. 1980; Mold., *Phytologia* 51: 281. 1982.

Baker (1900) cites only the type collection, *Volkens 132*. Schlieben refers to the plant as a shrub, 1--2 m. tall, with white corollas, and encountered it in open woods, at 300 m. altitude, flowering in January.

The *Mearns 262 & 269*, cited by me in *Phytologia* 6: 219 (1958) prove actually to represent *V. strickeri* Vatke & Hildebr. and not *V. volkensis*.

Additional citations: TANGANYIKA: *Schlieben 5910* (Ld, Mu).

VITEX VONDROZENSIS Mold.

Additional bibliography: Mold., *Phytologia* 17: 244. 1968; Mold., *Fifth Summ.* 1: 264 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 252 & 595. 1980.

VITEX WATERLOTI Danguy

Additional bibliography: Mold., *Phytologia* 17: 244. 1968; Mold., *Fifth Summ.* 1: 264 (1971) and 2: 731 & 931. 1971; Mold., *Phytol. Mem.* 2: 252 & 595. 1980.

VITEX WELLENSI DeWild.

Additional bibliography: Mold., *Phytologia* 17: 244. 1968; Mold., *Fifth Summ.* 1: 232 (1971) and 2: 931. 1971; Mold., *Phytol. Mem.* 2: 222 & 595. 1980.

VITEX WELWITSCHII Gürke

Additional & emended bibliography: J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 317 & 329. 1900; Irvine, *Pl. Gold Coast* 437. 1930; Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 403. 1938; H. N. & A. L. Mold., *Pl. Life* 2: 68 & 89. 1934; Mold., *Phytologia* 17: 244. 1968; Mold., *Biol. Abstr.* 50: 942. 1969; Hocking, *Excerpt. Bot. A.15*: 421. 1970; Mold., *Fifth Summ.* 1: 225, 232, 239, 245, 247, 249, & 253 (1971) and 2: 714, 720, 721, 728, & 931. 1971; Mold., *Phytol. Mem.* 2: 215, 222, 228, 235, 236, 238, 242, & 595. 1980.

Baker (1900) cites only the type collection, *Welwitsch 5644*, from Angola. Leeuwenberg refers to the plant as a shrub, 5 m. tall, the leaves thinly coriaceous, and the immature fruit nearly obovoid, to 3 x 2.5 cm. in size, apically apiculate, and encountered it at 515 m. altitude, in fruit in July. Louis found it in flower in October. The type specimen, in the British Museum herbarium, was photographed there by F. G. Meyer as his type photograph number

Additional citations: CAMEROONS: *Leeuwenberg 6182* (E--2160139). ZAIRE: *Donis 3307* (Mu); *Louis 2321* (W--2090931), 6292 (N), (W--2091109). ANGOLA: *Welwitsch 5644* [F. G. Mey. photo 2993] (Gz--photo of type, N--photo of type).

VITEX WELWITSCHII var. *LAURENTII* (DeWild.) Pieper

Additional bibliography: Prain, *Ind. Kew. Suppl.* 4, imp. 1, 248. 1913; A. W. Hill, *Ind. Kew. Suppl.* 7: 252. 1929; Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 403. 1938; Prain, *Ind. Kew. Suppl.* 4, imp. 2, 248. 1958; Mold., *Phytologia* 6: 223--224. 1958; Mold., *Résumé* 139, 143, 381, 385, & 479. 1959; Mold., *Fifth Summ.* 1: 225 & 232 (1971) and 2: 714, 720, & 931. 1971; Mold., *Phytol. Mem.* 2: 215, 222, & 595. 1980.

VITEX WILMSII Gürke

Additional bibliography: *Thiselt.-Dyer, Ind. Kew. Suppl.* 2: 194. 1904; Fedde & Schust., *Justs Bot. Jahresber.* 57 (2): 404. 1938;

Mold., *Phytologia* 6: 24 (1957) and 6: 224--227. 1958; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14362. 1959; Mold., *Résumé* 152, 154, & 479. 1959; Mold., *Phytologia* 8: 94. 1961; Watt & Breyer-Brandwijk, *Med. Poison. Pl. S. Afr.*, ed. 2, 1055 & 1454. 1962; Compton, *Journ. S. Afr. Bot. Suppl.* 6: 66, 156, 177, & 178. 1966; Mold., *Résumé Suppl.* 16: 30. 1968; Van der Schijff, *Check List Vasc. Pl. Kruger Natl. Park* 81. 1969; Mold., *Fifth Summ.* 1: 253, 255, & 258 (1971) and 2: 727, 731, & 931. 1971; Palmer & Pitman, *Trees South. Afr.*, ed. 2, 3: 1951, 1960, & 1961. 1972; Gibson, *Wild Fls. Natal* 93. 1978; Mold., *Phytol. Mem.* 2: 242, 244, 247, & 595. 1980.

Additional illustrations: Palmer & Pitman, *Trees South. Afr.*, ed. 2, 3: 1960. 1972; Gibson, *Wild Fls. Natal* 92/93 (in color). 1978.

Palmer & Pitman (1972) provide an excellent description of this species, but include var. *reflexa* as a synonym: "It is a large deciduous shrub or small tree up to about 7.6 m high with densely hairy twigs and silvery and often hairy foliage. The leaves, composed of 3--5 leaflets arising from one point, are borne on robust, hairy stalks up to about 5 cm long. The leaflets are 2.5--11 cm long and 1.3--6 cm broad, egg-shaped, oval, or widely lance-shaped, the tips round or pointed, often with a short jutting point, the base tapered or sometimes rounded, the blade often rough to the touch, very hairy or smooth, with the midrib and veins frequently woolly below [the smoother form is var. *reflexa*], the margins usually but not always untoothed (those on coppice shoots scolloped) and often outlined with a fringe of fine hairs. The leaflets are stalkless or with very short stalks. The mauve or white flowers are borne in branching heads on long stalks in the axils of the leaves from about August to November. The small cone-shaped fruits are surrounded by the enlarged, 5-lobed calyx. They ripen from February to March. Zulus use the tree as a prophylactic when serious disease breaks out in a kraal. The specific name honours Dr Friedrich Wilms, 1848--1919, German apothecary, who set up a druggist business in Lydenburg in the Transvaal in 1883 and collected largely in that District.: They report the vernacular names, "ama-khosikati", "um luthu", and "Wilm's vitex", and report that "This is a species of the northern and eastern districts -- of the north eastern Transvaal, Natal and Swaziland, with one record from the Transkei -- growing in woodland, in bushveld, sometimes on the banks of streams and on high, rocky, exposed mountain sides, from altitudes of 600 to 1800 m." Gibson (1978) refers to it as "A beautiful tree". Van der Schijff (1969) records it from Kruger National Park on the basis of his no. 3964. Compton (1966) also avers that it is "a handsome plant". growing on hillsides in Swaziland and there called "emakhosikati".

Recent collectors describe it as a small tree, to 20 feet tall, or a "scandent shrub" [Edwards 3279], and have encountered it in scrub forest on white sand and "common" in short bushveld on rocky slopes, at 400--2000 feet altitude, in flower in November and in fruit in March.

[to be continued]